



VOL. XXXI.

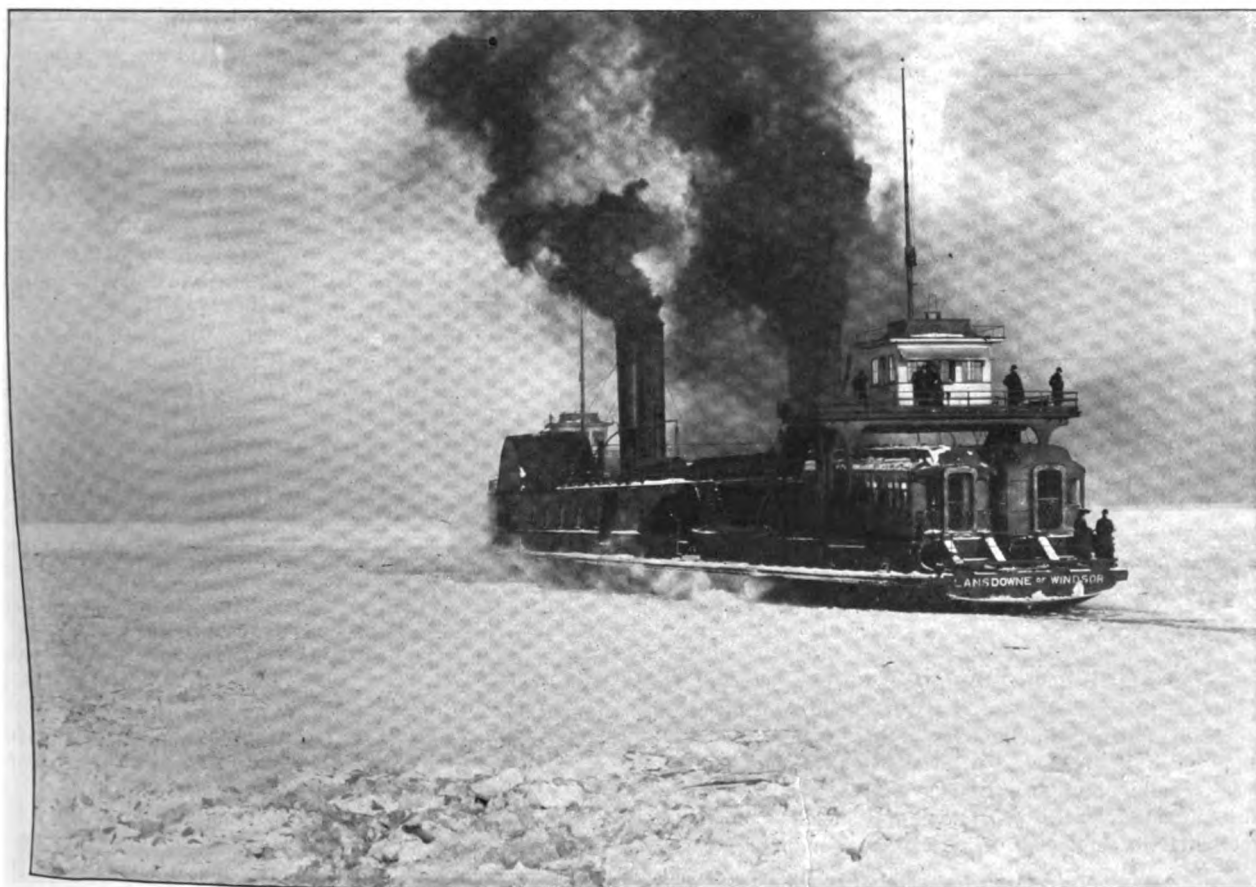
CLEVELAND, O., MARCH 30, 1905.

No. 13.

DECLINE OF CHICAGO AS A LAKE PORT

Some very striking facts are contained in the report which Mr. Dennis Sullivan has drawn up for the Chicago River Improvement association. There has been a falling off in interest on the part of the people of Chicago in the improve-

inadequate to care for it. Ten years ago almost all of the large ships could enter Chicago harbor and river and were limited in their draught only by the tunnels. Today the largest vessels on the lakes cannot get through Rush street bridge, owing to the narrowness of the draw, and some of



GRAND TRUNK CAR FERRY LANSDOWNE CROSSING THE DETROIT RIVER.

Built by Detroit Dry Dock Co.

[Copyrighted, 1905, by Detroit Photographic Co.]

ment of the Chicago river, due in part undoubtedly to the fact that the tunnel question is now regarded as practically settled. It is true that the river is in much better shape now for navigation than it was five years ago, but the situation of the city of Chicago in its relation to lake trade is nevertheless an alarming one. During the past few years the commerce of the lakes has grown with such amazing strides that the facilities offered by Chicago as a port are

them, owing to their draught, cannot navigate the river at all. Ten years ago the largest vessel on the lakes did not exceed 350 ft. in length and 45 ft. in beam. Today the larger ships are from 545 ft. to 560 ft. in length and from 55 ft. to 60 ft. in beam. With this great increase in the size of vessels every center pier bridge becomes an obstruction to navigation. The city of Milwaukee has been wise in providing that the navigable draw in every bridge in that

city shall not be less than 75 ft. in width; yet the city of Chicago has bridges with draws of less than 55 ft. This is due to the fact that in many places the bridges have been located, not with a view to providing the greatest possible width of draw, but to fit the streets at which they cross the river. The tail pits of the new bascule bridge at State street extend into the river a distance of 30 ft. on each side, lessening the width of the channel by 60 ft. Mr. Sullivan thinks that in future installations of bridges the government engineer should see to it that the tail pits do not encroach upon the navigable portion of the stream.

Various projects are recommended for the improvement of the harbor. The first is the project of deepening the outer harbor to a depth of 21 ft., formulated by Major W. L. Marshall in 1897. The second is the improvement of the river so as to secure a depth of 21 ft. from the mouth of Belmont avenue on the north and to the stockyards on the south.

Some interesting tables are included, giving the number of tons of commodities moved for each calendar year from 1890 to 1904, inclusive, at Chicago and Calumet, together with the annual total of these two harbors.

	Chicago.	Calumet.	Total Chicago and Calumet
1890.....	8,212,535	753,599	8,966,134
1891.....	7,209,514	1,795,401	9,005,915
1892.....	7,214,795	2,006,751	9,281,546
1893.....	8,412,992	1,822,907	10,235,899
1894.....	7,958,993	993,379	8,952,372
1895.....	7,209,236	1,436,897	8,646,133
1896.....	7,205,942	2,857,750	10,063,692
1897.....	6,347,163	2,973,724	9,320,887
1898.....	7,149,759	3,493,218	10,642,977
1899.....	7,301,454	4,117,526	11,508,980
1900.....	6,189,395	3,229,874	9,419,269
1901.....	5,873,070	3,783,074	9,656,144
1902.....	6,184,242	3,995,277	10,179,519
1903.....	5,184,792	4,454,428	9,639,220
1904.....	6,105,553	4,742,223	10,847,778
1904.....	4,446,071	3,728,260	8,174,331

This table shows that the enormous decline of commerce of the Chicago river is not offset by the tonnage at South Chicago, as the total for the two harbors in 1904 is less than that of the Chicago harbor alone in 1889. The trade of Duluth increased from 5,325,351 tons in 1895 to 17,966,718 tons in 1903 and the tonnage of Sault Ste. Marie canal increased from 10,796,572 tons in 1893 to 35,961,146 tons in 1902. These figures are especially significant when it is considered that from 1889 to 1904 the population of Chicago has more than doubled; that during this period the deepening of the channel of the lakes has brought large ships into being, reducing materially the cost per ton of carriage by water and notwithstanding these improvements in general, the waterborne commerce of Chicago has declined nearly 50 per cent in these fifteen years. Early action is therefore recommended on the subject.

SHIP BUILDING AT BATH

In spite of the prophecies made at the beginning of the year that the season of 1905 would be the hardest in the ship building line which Bath had experienced in half a century, the outlook is more promising now than it has been for many months and indicates that there will be a busy spring and summer in Bath ship yards. One of the chief hindrances to a far more rapid progress of the industry has been the fact that shipping interests have been unable to secure what they consider favorable legislation from congress, and have held off to some extent in placing orders until they feel reasonably sure that something will be done to benefit them.

Particularly true is this of the steel ship building firm of Arthur Sewall & Co., whose yard has been idle for nearly two years. This firm is one of the most progressive in the country and its office is filled with the designs of numerous rigs upon which work might begin at almost any time. Among them is a novelty in the way of a four-masted barkentine. It

is believed at this office that such a type would be practical for both the foreign and domestic trade, and could be managed much cheaper than the massive ships plying in the foreign trade. It is believed that such a vessel would prove exceptionally seaworthy and run before a gale at sea and have the speed of a coaster, which are two of the principal economic features of the craft. Another important feature would be the fact that, if business in the foreign trade should happen to be slack, she could engage in coasting or other domestic trade, thus keeping her busy all the time. Such a craft would be designed principally, however, for the Philippine trade.

Work has been very dull in the Bath yards all the winter, for the launching of three vessels in January left Bath yards practically barren, except for a four-masted schooner building at the yard of Capt. James W. Hawley, which will be ready to launch shortly. Capt. Hawley has had a crew engaged upon this craft all winter.

A few weeks ago Mayor-elect Elwell S. Crosby began work on a new four-masted schooner of about 1,500 tons for the general carrying trade. This is the fourth of a new fleet being constructed by Mr. Crosby for the general coastwise trade, and the eleventh in his total construction. The principal feature of this vessel and the one preceding it is the frame, which is to be composed entirely of live oak purchased by Mr. Crosby more than a year ago from the United States government and which lay under the waters of Portsmouth harbor for about forty years, having been sunk at the time of the civil war. It has thus become thoroughly salted and impregnable to decay.

Percy & Small, builders of the big six-masted schooner Eleanor A. Percy, the largest wooden schooner afloat, have recently secured from William F. Palmer, the Boston manager of shipping interests, the contract for a five-masted schooner of 3,000 tons. She will be 275 ft. in length, 47.5 ft. breadth of beam and 27.5 ft. depth of hold. Work will begin on her early in the spring and she will be ready to launch in September. The same firm also probably will build a four-masted schooner for themselves, beginning work on it soon after starting Mr. Palmer's.

The New England Company will begin work next week on two vessels. This concern has had the contract for a four-masted schooner for James B. Drake & Sons of Bath for the past two months and she will be very similar to the four-master Alice May Davenport, which grounded in January on the mud flats of North Dennis, where she still remains. This same concern secured yesterday the contract for a barkentine for New York parties, which is to be of 800 tons, and will create considerable interest, as this will be the first barkentine built in this city for thirteen years.

The last wooden barkentine built in Bath was the James W. Elwell, constructed by the Kelley, Spear Co. in 1892, but which later was changed to a four-masted schooner. Shipping men claim, however, that a return to the barkentine is a good sign and that vessels of this class are likely to be built in large numbers, as they are the best suited for off-shore voyages. The barkentine is claimed to be the most perfect rig for small vessels.

Gardner G. Deering, the veteran ship builder of Bath, is to build a four-masted schooner this spring, as also are Frank S. Bowker & Sons of Phippsburg Centre. It is understood that William T. Donnell will open his yard again for the construction of a five-masted schooner.

The fact that the Bath Iron Works has been separated from the ship building trust and has returned to Bath control, with John S. Hyde at the head, is taken as a favorable sign for the commercial interests of that city. The powerful battleship Georgia is being finished at this plant. This will require a year's time to complete at least, and it is believed that other contracts will be coming to this concern, as they will be eagerly sought under the new management.

LIVERPOOL SHIPPING LETTER

Liverpool, March 10.—Quite recently some interesting trials have been made on the British admiralty's measured mile at Long Reach of a new 40-ft. motor boat built by Messrs. Zarrow and engined by Messrs. S. F. Edge, Ltd. The hull, which is 40 ft. in length, is the result of a long series of experiments, in which full-sized models were towed alongside a torpedo boat, a dynamometer being attached to the tow line in order to ascertain the resistance of the various models at high speed. The engines are the same as those fitted to Napier II, which competed in the Harmsworth cup and other events last summer with only moderate success, owing to defects in the design and construction of the hull. They consist of two 80-H. P. motors. The new Napier II is built of steel, and has an absolutely flat bottom, so that the boat is driven over the surface of the water rather than through it. On the trials under notice a speed was obtained of 24.8 knots against the tide and 27.15 knots with the tide, which give a mean speed of 25.98 knots, which is equivalent to 30 miles an hour. At a luncheon which concluded the trials, Mr. Zarrow stated that had Napier II been fitted with steam engines the probable speed would have been only 16 knots, and that the introduction of the internal combustion engine with its saving of weight might render possible in the future speeds hitherto undreamed of. If a 40-ft. boat was capable of a speed of 26 knots, a vessel 220 ft. in length should be capable of as much as 45 knots when the internal combustion engine was perfected and made in larger sizes than at present. Mr. Zarrow stated that there was a great future before the motor boat in torpedo warfare and said that his firm would shortly be making internal combustion engines from designs supplied by Messrs. S. F. Edge, Ltd.

Apropos of motor boats, it is stated that the Thames Conservancy, being anxious to minimize the risk of danger in the use of motor boats, is considering a series of regulations for their control on the Thames, and for the installation of petrol tanks, pipes and fittings in such a way as to reduce, so far as possible, any danger while in locks or in crowded parts of the river. The Automobile club and the Marine Motor association, together with the Thames Conservancy, have recently held a conference on the subject. During the proceedings Mr. Phillipson, the secretary of the Conservancy, mentioned that forty-six motor boats were registered in 1900, seventy-six in 1901, 123 in 1902, 189 in 1903 and 273 in 1904.

An important scheme that is likely, if carried to completion, to have far-reaching effects on the port of London has just received the sanction of the Thames Conservancy. The proposal is to construct a timber quay near Greenhithe, about a mile and a quarter long, which will accommodate the larger vessels at low water. Mr. Ernest Forwood, late of the firm of Forwood Bros., is really the originator of the scheme, and he is said to have an influential backing in the London shipping trade, with which he has been closely connected for the last thirty years. The difficulty at present experienced in the London docks is the amount of the dock dues. The capital expended on these docks has reached the enormous total of \$100,000,000. To earn interest on this amount the charges must of necessity be heavy, while extensive dredging operations have continually to be undertaken. The huge wharf contemplated in Mr. Forwood's proposal is sufficiently near the mouth of the river to avoid this necessity, while it is to be placed so far into the river as to allow vessels to run alongside under their own steam at any state of the tide. Big ships will be able to discharge onto a wide quay space and lose no time dodging up a foggy Thames. This proposal will not do away with the large fleet of barges that bring the goods up the Thames, but it is intended rather to improve

the facilities of their loading and unloading. While the big steamers will be accommodated on the deep water side of the wharf, space is reserved for the barges on the land side, so that fleets of both classes of vessels can be accommodated at the same time. Provision is also made for ten transport sheds, each 300 ft. long and 61 ft. wide. The plans for this proposal have been prepared by Mr. E. Crutwell and Sir John Wolfe Barry, and the cost is put at slightly under \$5,000,000. With this capital expenditure it is estimated that the wharf will allow of 6,000,000 tons of traffic being handled, and the promoters estimate that the expenses of steamers will be vastly reduced. They are, indeed, so enthusiastic as to hint at London ultimately becoming a free port, but it is admitted that a considerable extension of deep water wharves would have to take place before this aim could be accomplished. There is no doubt the present docks will be very seriously affected, but it is pleaded that their charges are injuriously affecting trade. At any rate, this new departure in the Thames of a deep water wharf on a large scale will be watched with keen interest by all connected with the shipping industry.

The following were the receipts from shipping using the Suez canal in the month of February and the first two months of the last two years:

MONTH OF FEBRUARY.			
	1905.	1904.	1903.
Ships	363	336	297
Receipts	9,810,000 f.	8,950,000 f.	7,860,000 f.

FIRST TWO MONTHS.			
	1905.	1904.	1903.
Ships	860	670	593
Receipts	21,066,742 f.	18,301,316 f.	16,106,125 f.

The new Allan Line turbine steamer Victorian returned to Belfast on Friday after a series of most satisfactory trials. Although the weather was squally and the sea rough the steamer was remarkably steady. Her engines worked smoothly and speeds varying from 18 to 20 knots per hour are said to have been obtained. She still remains at Belfast to receive the finishing touches prior to leaving for Liverpool to take her place in the Allan Line Canadian mail and passenger service. She is advertised to sail from Liverpool on Thursday, March 23.

The North Atlantic steamship companies seem now determined to pull together in perfect unity and energy with regard to the business which during the rate war was so disastrous to all concerned. After the third-class rates had been finally settled, attention was directed to the first and second-class departments with the result that it has been decided to make some increase in the rates affecting these classes, which had been exempt from the rate war. It appears that the conclusion arrived at is to advance as regards saloon former rates, generally speaking, from \$5 to \$12 for differentiating positions in North Atlantic boats and about \$5 for second-class. As all the North Atlantic companies are working in perfect amity, the arrangement will be carried out loyally all through.

The steamer Hazel Dollar, built by Messrs. A. Rodger & Co., Port Glasgow, for Mr. Robert Dollar, San Francisco, ran trials on the Clyde on Thursday, March 9, and on the measured mile attained a speed of 12¼ knots. The new vessel, which is the largest yet built by Messrs. A. Rodger & Co., has a deadweight carrying capacity of 7,000 tons. She has been specially designed for the lumber trade between San Francisco and China, and is 370 ft. in length, breadth of 50 ft. and depth (molded) 29 ft. 3 in. During the trial trip Mr. J. H. Hutcheson, for the builders, proposed success to the new vessel. After referring to the special designing of the Hazel Dollar as a carrier steamer, Mr. Hutcheson remarked that this was the firm's first connection with American clients. Mr. Dollar replied and ex-

pressed satisfaction with the ship, referring particularly to the low cost of vessels built in the United Kingdom. American specifications for such a vessel were, he said, about \$240,000, a price that was very much in excess of that of the Port Glasgow firm.

RATE MAKING POWER

President Joseph Ramsey, Jr., of the Wabash Railroad, believes it would be indisputably unfair to the railroads to invest the power of rate making in the Interstate Commerce Commission or further clothe that body with the authority to regulate railroad affairs at the mere suggestion of the shippers. His views on the subject of rates are based on years of experience and exhaustive study, as there is scarcely a railroad in the country which has had to contend with more competition in the way of rate cutting than the Wabash. Speaking on this subject, Mr. Ramsay said:

"The Interstate Commerce Commission has been instrumental in bringing about very satisfactory conditions in regard to commercial relations between the railroads and shippers, but to empower it with the authority to regulate railroad rates would only result in destroying the harmony that has been established. It would be decidedly unfair to the railroads to enact such a law. Unless the commission being similarly empowered to say what prices should be asked for all material and merchandise there would be absolutely no equity in such a law. Besides the commission is a partisan body, its membership being subject to the dictates of the current administration so far as the appointing of members is concerned. The matter of adjusting railroad rates is too far reaching in its effect and too important a question to be handled through any institution of a political nature.

"Men who determine the rates of railroads must be versed in the subject in every minor detail and their knowledge is attained only by long years of experience and exhaustive study. It is a department of railroad work that requires the service of men who have grown up in the work and by practical experience have gained the knowledge necessary in dealing with the many intricate questions that come before the rate department. It does not seem likely that men who would be appointed to the membership on the Interstate Commerce Commission would be of this class. Good rate men are too scarce to make it possible. Existing conditions would by no means indicate the necessity of investing further power in the Interstate Commerce Commission. There never was a time in railroad history when more satisfactory conditions prevailed. For years we have been striving to bring about uniformity in rates by which all shippers have equal rights. This, I can safely say, has been done, and the matter of paying rebates is a thing of the past.

"The smallest shipper is now able to compete with the giant concerns so far as railroad rates are concerned. All this has been brought about under the protecting wing of the Interstate Commerce Commission, but that fact cannot be taken as proof of further good that might be accomplished by giving the commission rate-making power. Only under one condition could such a law be enacted with absolute equity, and that is to give the commission the right to fix prices on all commodities. The railroad companies are obliged to buy material at the producers' prices, and why should we not be privileged to say what rates should be charged for transporting this material? When the Interstate Commerce Commission is empowered to regulate prices on all products then it will be time for them to say what rates the railroads shall fix. Statistics will show that as compared with the value of freight carried the railroads ask only a fraction more than 2 per cent. of the estimated value of the tonnage."

TURBINES FOR COLUMBIA AND MINNEAPOLIS

Mr. E. S. Cramp, vice-president of Cramps, Philadelphia, has made a suggestion to the navy department that the triple screw cruisers Columbia and Minneapolis be remodeled and equipped with turbine machinery. These vessels were designed by the United States navy to overtake anything in the merchant line afloat. At the time they were built they were the fastest vessels on the ocean, but latterly rapid strides have been made in passenger steamship construction and it is doubtful if the cruisers could now attain a speed equal to that possessed by a few of the modern liners. Moreover they are extremely expensive vessels to keep in commission. Their consumption of coal and oil is enormous. The machinery in these vessels weighs about 2,000 tons, and it would be impossible to get additional speed out of them by installing new reciprocating engines, the added weight upsetting all calculations which entered into the original design. Mr. Cramp's suggestion, therefore, that turbine engines and water tube boilers be installed is a very timely one. His proposition is as follows:

"Congress should pass a bill authorizing the secretary of the navy to contract for the installation in the cruisers Columbia and Minneapolis of turbine of a type proven and accepted and in successful operation, with water-tube boilers of the character as called for in the specifications of the new scouts, all of sufficient power to make 24 knots for six hours at sea, the details of trial to be arranged to meet the approval of the secretary of the navy. The advantages of this plan are many. The saving in the weight of machinery will approximate 900 tons. The speed will be increased at least one knot, as it will take the less power to drive the vessel on the finer lines than at present. The space occupied by machinery and boilers will be reduced from 25 to 30 ft. in the fore and aft direction. The department will have the two most formidable scouts in the world, and the cost of changing them will be about the cost of one of the new scouts as already designed. These vessels will have 2,000 tons of coal in their bunkers, as compared with 1,000 tons in the projected scouts."

THE NEW YORK BARGE CANAL CONTRACTS

The state superintendent of public works at Albany, N. Y., has announced the award of additional contracts for barge canal work as follows: Contract No. 2, Erie canal, Section 1, for the excavation and protection of the sides of the canal from the Mohawk river to a point about one-fourth of a mile west of the head of Lock No. 3 and the construction of locks Nos. 2 and 3, with the approaches and appurtenant parts, to the Ferguson Contracting Co. of No. 69 Wall street, New York, for \$852,330; contract No. 3, Champlain canal, lake line, for the excavation of the canal and the protection of its banks from a point below Fort Miller to a point above the guard gate at Crooker's Reef and the change in location of the old Champlain canal, and all other incidental work, to Sundstrom & Stratton of No. 143 Liberty street, New York, for \$670,497; Contract No. 5, Erie canal, Section 7, for the construction of the canal and its appurtenances from a point near Mosquito Point bridge over Seneca river to station 5373, east of the village of Savannah, length 5.66 miles, to Lindon W. Bates of No. 74 Broadway, New York, for \$381,987.50. This leaves but one contract undisposed of—namely contract No. 6, located just west of Rochester, no bids were received last December.

Judge Dallas, of the circuit court of appeals of Philadelphia, has reversed the decision of the United States Circuit Court at Pittsburg in the suit for infringement of handles brought by the Chicago Pneumatic Tool Co. against the Cleveland Pneumatic Tool Co., his decision being that the court erred in granting an injunction against the Cleveland Pneumatic Tool Co. This decision, therefore, is adverse to the claim of the Chicago Pneumatic Tool Co. that it controls everything in handles for pneumatic tools.

DOMINION MARINE ASSOCIATION

Ottawa, March 28.—The annual meeting of the Dominion Marine association, the most important marine body in Canada, has just closed here. Representatives of transportation and passenger lines from all parts of Canada attended, among the number being: President J. A. Cuttle, Montreal Transportation Co., Montreal; vice president, H. C. Hammond, Northern Navigation Co., Toronto; C. F. Gildersleeve, Bay of Quinte Navigation Co., Kingston; J. H. Hall, Ottawa Forwarding Co., Ottawa; W. H. Richardson, Richardson & Son, grain handlers, Kingston; Charles R. Smith, Richelieu & Ontario Navigation Co., Montreal; R. O. Mackay, Hamilton & Fort William Navigation Co., Hamilton; D. Murphy, Ottawa: Capt. Thomas Donnelly, Kingston; Frank Plummer, Canadian Lake & Ocean Navigation Co., Toronto; S. Crangle, St. Lawrence & Chicago Steam Navigation Co., H. H. Gildersleeve, Northern Navigation Co.; H. S. Folger, St. Lawrence River Steamboat Co., Kingston; B. W. Folger, Niagara River Steamboat Co., Toronto; R. W. Shepherd, Ottawa River Navigation Co., Montreal; R. T. Holcomb, Ottawa Forwarding Co., Ottawa; G. B. Greene, The Upper Ottawa Improvement Co.; Mr. Wiley, Port Arthur; D. F. McIntosh, Niagara, St. Catharines & Toronto Navigation Co.; J. Hanna, J. P. Kavanagh, Ogdensburg; G. P. Murphy, Ottawa Transportation Co., Ottawa.

The most important matters dealt with by the association were in reference to arranging for committees to wait on the government to obtain legislation in the interests of mariners. Francis King, Kingston, the secretary, read a report of the work of the executive for the year 1904.

It referred to the doing away of the canal tolls by the government for two years and as the time was nearly up the government was to be asked to have it continued. The association advocated the improvement of the all-water route to Montreal and that the government should operate the Lachine canal gates by electricity as this would save four or five minutes for vessels passing each lock gate. Inspection fees were referred to and it was proposed that the association endeavor to get the United States government to do away with tonnage fees.

Reference was made to opposing the bill to do away with the exemption of tugs and freight carriers from the steamboat inspection act and the opinion was expressed that the bill would not and should not pass. The report also referred in detail to changes in rules, the charges at government wharves, hospital dues, aids to navigation, irregularities in the weighing of grain at grain elevators, trimming charges and methods at elevators, harbors at Fort William and Port Arthur and lake traffic generally.

The membership of the association remains as it was during 1903 and 1904 with the exception of three or four new companies having joined. The total tonnage represented is 112,297, of which 79,349 tons is steam and 32,948 other vessel property. The association represents practically the leading freight and passenger lines on the great lakes and St. Lawrence. All the Canadian vessels carrying grain upon the lakes have come into the association with the exception of what are called the Clergue boats at the Sault, and the Canada Atlantic and the Canadian Pacific steamers.

A deputation from the association waited on the Hon. Raymond Prefontaine, minister of marine, and asked that rules with regard to the inspection of Canadian steamboats on the great lakes be made to correspond with the American rules, particularly as regards the size and capacity of life preservers. They also asked that sick mariners dues be abolished and a bond substituted by which it would be agreed to pay for the sick without creating a special fund.

The "rules of the road" of the Canadian and United States waters are now practically similar, this being arrived at by

mutual consent and it prevents a lot of trouble because mariners of both countries frequently find themselves first in Canadian and then in American waters.

ENGINE AND BOAT MANUFACTURERS

A meeting of the executive committee of the National Association of Engine and Boat Manufacturers was held at their office, room 14, 314 Madison avenue, New York city, March 24, at 8:30 p. m. The meeting was largely attended. Matters of considerable interest were discussed and after the routine business had been disposed of the committee proceeded to the election of officers for the ensuing year. The following will be the officers: President, John J. Amory; first vice president, Mr. H. A. Lozier, Jr.; second vice president, Mr. Charles A. Strelinger; third vice president, Henry R. Sutphen; treasurer, Mr. J. S. Bunting and secretary, Mr. Hugh S. Gambel. The executive committee is composed as follows: Mr. John J. Amory, chairman; class of 1908, Messrs. J. B. Smalley, James Craig, Jr., C. L. Snyder, Eugene A. Riotte and A. Massenat. Class of 1907, Messrs. John J. Amory, H. A. Lozier, Jr., J. S. Bunting, H. N. Whittelsey and Charles A. Strelinger. Class of 1906, Messrs. S. J. Matthews, A. Snyder, H. H. Brautigam, Albert E. Eldridge and Henry R. Sutphen. The various committees are made up as follows: Legislation: Mr. J. S. Bunting, chairman; A. Snyder, Eugene A. Riotte and J. M. Truscott. Transportation: H. A. Lozier, Jr., chairman; C. L. Snyder, H. N. Whittelsey and J. B. Smalley. Exhibitions: Henry R. Sutphen, chairman; J. S. Bunting, A. Massenat and S. J. Matthews. Agencies: the executive committee as a whole. Advertising: Mr. H. N. Whittelsey, chairman; Henry R. Sutphen and A. Massenat. Technical: Mr. Charles A. Strelinger, chairman; A. Snyder and H. N. Whittelsey.

The following were elected to active membership in the association: H. C. Fairbanks, representing the Fairbanks-Grant Mfg. Co., and John V. Rice, Jr., representing John V. Rice, Jr., & Co. While not in existence a year this association has more than doubled its membership and now comprises in membership the leading manufacturers of motors and builders of boats throughout the United States, as well as those engaged in the manufacture of all accessories. The interest taken in motor boats proves conclusively that the motor boat both for pleasure and as a sport is here to stay.

SEA TRIAL OF CHINA SQUADRON

One hears so much in disparagement of the performance of naval ships that it is well, once in a way, to show how the vessels of a squadron succeed in their sea trials. The report of the British China Squadron is just to hand, and on the eight hours' run every ship did well, exceeding the official contract speeds, although most of the vessels have been three or four years in commission. The best cruiser speed was got with the Amphitrite, built by Vickers, which attained a mean on her eight hours' sea trial of 21.30 knots, as compared with the designed speed of 20.75 knots. Next comes the Andromeda, a Dockyard-built ship, engined by Hawthorn, Leslie & Co., which steamed 20.01 knots, only 0.15 miles below the contract rate. Of battleships, the Vengeance, also a Vickers ship, takes first place, with a speed on the eight hours' sea trial now of 19.10 knots, against the designed speed of 18.25 knots. The other ships are the Albion, by Thames Iron Works, which steamed 18.7 knots; the Glory, by Laird, which got 18.6 knots; and the Ocean, engined by Hawthorn, Leslie & Co., which got 18.83 knots. The designed speed in these three cases was 18½ knots. Practically all of these ships have the Belleville boiler. Steam Navigation Around New York in Early Days.

Major J. C. Sanford, government engineer at Philadelphia, has been ordered to prepare plant for the resumption of work on the 30-ft. channel in the Delaware.



DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED
OR ASSOCIATED WITH MARINE MATTERS
ON THE FACE OF THE EARTH.

Published every Thursday by

The Penton Publishing Company,
CLEVELAND, OHIO.

CLEVELAND:
CHICAGO:
DETROIT:
NEW YORK:

BROWNING BUILDING.
MONADNOCK BUILDING.
HAMMOND BUILDING.
150 NASSAU STREET.

*Correspondence on Marine Engineering, Ship Building and
Shipping Subjects Solicited.*

Subscription, \$3.00 per annum. To Foreign Countries, \$4.50.
Subscribers can have addresses changed at will.

The Cleveland News Co. will supply the trade with the MARINE REVIEW
through the regular channels of the American News Co.

Entered at the Post Office at Cleveland, Ohio, as
Second Class Matter.

MARCH 30, 1905.

Credit should be given to the United States Steel Corporation for the completeness with which it relates the exact state of its affairs in its annual reports whether they are favorable or unfavorable. The wisdom of this policy is emphasized by the fact that notwithstanding certain discouraging features published in its last report its stock is suffering no perceptible reduction in the market. Publicity is much better than concealment, for concealment provokes apprehension and imaginary enemies are always bigger than real ones. The report just issued indicates a decided lessening in the number of its stockholders, over 3,000 persons having sold out their preferred stock and over 10,000 having sold out their common stock during the year. These figures would tend to show that the stock is gravitating to large holders who are thus strengthening their control of the corporation. A surplus of \$5,047,852 is reported as against a surplus of \$12,304,916 for 1903, although it should be borne in mind that \$12,707,563 was paid in dividends on the common stock during 1903 and that none was paid during 1904. The net earnings of the year show a falling off from \$109,171,152 to \$73,176,522 in spite of the great reduction of \$55,641,284 in operating expenses. The reduction in salaries and wages amounted to \$20,985,602 and as the dividends on the preferred stock was

\$25,219,677 it can be seen that more than four-fifths of this was saved out of salaries and wages. Of course, this does not necessarily mean a reduction of wages for the individual but rather represents the employment of a diminished force. The bonded debt of the corporation has been increased from \$551,041,935 to \$571,791,341. The property account itself shows an increase from \$1,357,394,469 to \$1,373,967,046 or \$16,572,577. The company at the close of the year had on hand unfilled orders for \$4,696,203 tons of manufactured products against 3,215,123 tons at the close of 1903. Sufficient has been related to indicate that the business of this huge corporation must fluctuate within wide limits. Its real strength, however, cannot be questioned because it rests upon the control of the raw material.

While the Merchant Marine Commission, which made a tour of the country last year, will hold no further hearings as a body it will nevertheless allow shippers and ship builders to present additional evidence in behalf of American shipping and such additional testimony will be transmitted to congress when it convenes next December. The bill framed by the commission is regarded as a very temperate one and there is no thought of amending its general plan though it may be amended in some of its details. There is every hope that the bill will pass at the next session of congress. Opposition to the measure at the last session was not active and it is said that a few members who hitherto have expressed opinions hostile to American shipping were not inclined to oppose the bill. There is probably today a better understanding of the shipping question among the people than ever before and the fact that the bulk of money to be distributed among American ships that conform to certain conditions will accrue from tonnage dues has disarmed those who feared that a direct tax was to be put upon the treasury. Congress has, indeed, been extremely niggardly in its treatment of shipping. It has been a generous friend to every industry save this one. Last year out of appropriations that aggregated three-quarters of billion dollars only the small sum of \$980,000 went to American ships—and that sum was for the distinct service of carrying the mails across the Atlantic ocean. Meanwhile countless millions are lavished in other directions. Consider these figures: In 1904 \$38,642,000 was paid for railway mail transportation and \$5,411,000 for railway post office cars. In 1904 \$81,876,791.43 went to the support of the navy and \$77,888,752.83 went to the support of the army. The grants of the government to the railways have been magnificent. They are practically no more than subsidies which becomes a bugaboo when applied to ships. True these grants were necessary and without them the railways could probably not have projected their lines from coast to coast. They were the only means whereby the internal development of the country could be accomplished and

Congress doubtless displayed wisdom in being generous. But would it not also display wisdom in being equally generous with shipping. The United States is big, but the world is bigger and the only means whereby the world may be encompassed is ships. Britain has steam tonnage of 16,000,000; its potential tonnage, based upon the lowest calculation, is 36,000,000. What position would the United States hold in its struggle for the command of the world's markets if it had a potential tonnage of 36,000,000 instead of 879,000 which is the actual and pitiable figure. The whole country should demand as a unit that something should be done to make profitable the operation of the American ship on the high seas.

FREIGHT SITUATION

The executive committee of the Lake Carriers' association closed contract with the Marine Firemen, Oilers and Water-tenders' union this week upon the basis of last year's schedule of wages. The firemen at first asked an increase of \$10 per month over the wages of last year but at no time was the executive committee disposed to grant it and the union finally decided to accept last season's scale, which is \$45 up to Oct. 1 and \$65 per month thereafter. With the signing of this schedule all agreements have now been concluded in so far as labor aboard ship is concerned. The season is rapidly advancing and navigation will probably open earlier than was expected.

The dock managers have been in continuous session for the past three days with the delegates of the Longshoremen's association, representing the coal and ore handlers of Lake Erie ports. The principal thing demanded by the workmen is the reduction of the hours of labor from eleven to ten. This, however, is a concession that the dock managers feel they cannot grant, especially in a season of such activity as the present one is going to be. The great weakness in the handling of lake commerce has always been the congestion at the docks and if the hours of labor were reduced this congestion would of course become more severe. Extraordinary efforts are being made on the part of the railways in constructing additional tracks and adding additional cars to care for the ore movement this year. The more ore that can be got into the cars and away from the docks the less congestion there will be and the dock managers feel that the ten-hour day cannot be granted. In point of fact this demand for a ten-hour day is not new. It has been advanced every season and the dock managers say that they would gladly have granted it long ago if they could possibly have done so. Last season the shovelers and hoisters accepted a reduction of 7½ per cent over the wage schedule of 1903. They are now demanding that this schedule be restored to the basis of 1903. It will probably be a day or two yet before agreements are concluded but there is no reason to anticipate other than a satisfactory outcome.

The executive committee of the Lake Carriers' association entered into contract last week with the Grain Scoopers' union for handling grain at the port of Buffalo. The shoveling rate will be the same as last year but the conditions accompanying it are somewhat more favorable to the men. The rate will be \$2.12 per 1,000 bu. and extra time will be paid for at the rate of \$3.12 per 1,000 bu. This extra rate applies to all grain handled between 6 o'clock on Saturday evening and 7 o'clock on Monday morning. Last year if a vessel started unloading at 5 o'clock Saturday she was to be completely unloaded at the regular rate and on no work was extra pay allowed until 10 o'clock Saturday night. Moreover the men will

not be required to wait more than an hour for a vessel and no cargo of less than 50,000 bu. will be unloaded between midnight and 7 A. M.

It is extremely interesting to note in connection with the ore trade that the Pittsburgh Steamship Co. has notified the owners of the 10,000-ton boats that they cannot expect to get cargoes of 10,000 tons of a single run of ore. The result of this announcement is that two bulkheads are now being constructed on the steamer J. C. Wallace giving her three compartments of over 3,300 tons carrying capacity each. Her cargo hold is 407 ft. long and, like the Wolvin, was of continuous construction, that is it was an uninterrupted open space from engine room to deck house. No orders have been issued as yet to put bulkheads in the Wolvin. The conditions which have operated to make this decision imperative is the problem of unloading the ore at the furnace. A cargo of 10,000 tons of ore would fill 225 railroad cars. Each furnace uses from seven to eight kinds of ore and the storage yard is so arranged as to accommodate the unloading of not more than twenty-five cars at each separate pile at once. To unload 225 cars would therefore require nine shifts and the necessary maneuvering would result in the serious delay of other trains. For this reason the Steel Corporation will not attempt to handle 10,000 tons of a single kind of ore at once.

No chartering was done in the coal trade during the past week but considerable is expected to be done next week. Owners have given options to the shippers on their tonnage.

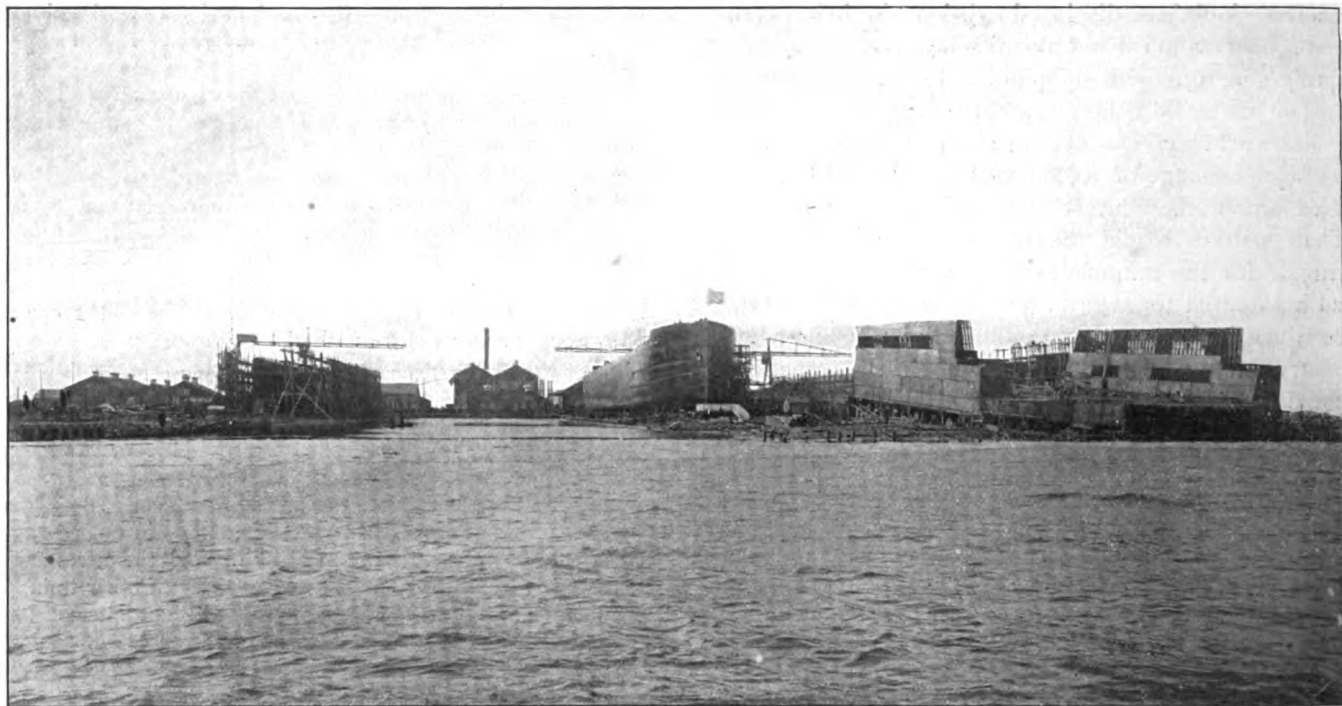
SITUATION AT HEAD OF LAKES

Duluth, March 29.—Total stocks of grain at the head of the lake were increased slightly the past week, though both wheat and flax showed a diminution. Oats was the grain that made the difference, with receipts above 300,000 and shipments of but 2,600. There are now 4,737,000 bu. oats in store and of all grains 17,955,000 bu. Receipts for the week of everything but oats were small, and wheat shipments and withdrawals to mills amounted to 73,000. Some wheat is being sold for eastern delivery on the opening of navigation. This week 300,000 bu. were so placed, and there is inquiry for more. But the market is exceptionally dull for this time of year. Lake freights are held at 2¼ cents to Buffalo for tonnage to arrive, and 2½ cents for ships in port. Some chartering has been done on this basis but the carriers and shippers are both waiting to see what will turn up. The talk of large shipments of Duluth wheat to Minneapolis is exaggerated, very little has gone there and except for some off grades that are getting a better price there than here little is liable to go.

Suit has been begun by the Union Towing and Wrecking Co. against the Erie & Western Transportation Co., asking judgment for \$20,000 on account of salvage for the steamer Muncy, belonging to the defendant company that the plaintiff claims its tug Zenith saved from fire. At the time of the destruction of the Omaha docks here last fall the Zenith hauled the Muncy out of the way of three burning tugs of the plaintiff company which had broken loose from their moorings and were drifting upon the steamer when she was pulled out of harm's way by the Zenith. The owners of the Muncy have refused to pay the claims, on account of the fact that it was tugs of the Zenith's owners that endangered the vessel.

The Detroit & Cleveland Navigation Co. is considering the advisability of operating a boat between Bay City and Detroit, and it is likely that the City of New York will be put on the run.

Canadian ship builders have asked the government for a bounty of \$6 per ton for ten years on Canadian-built ships to prevent the industry against British competition.



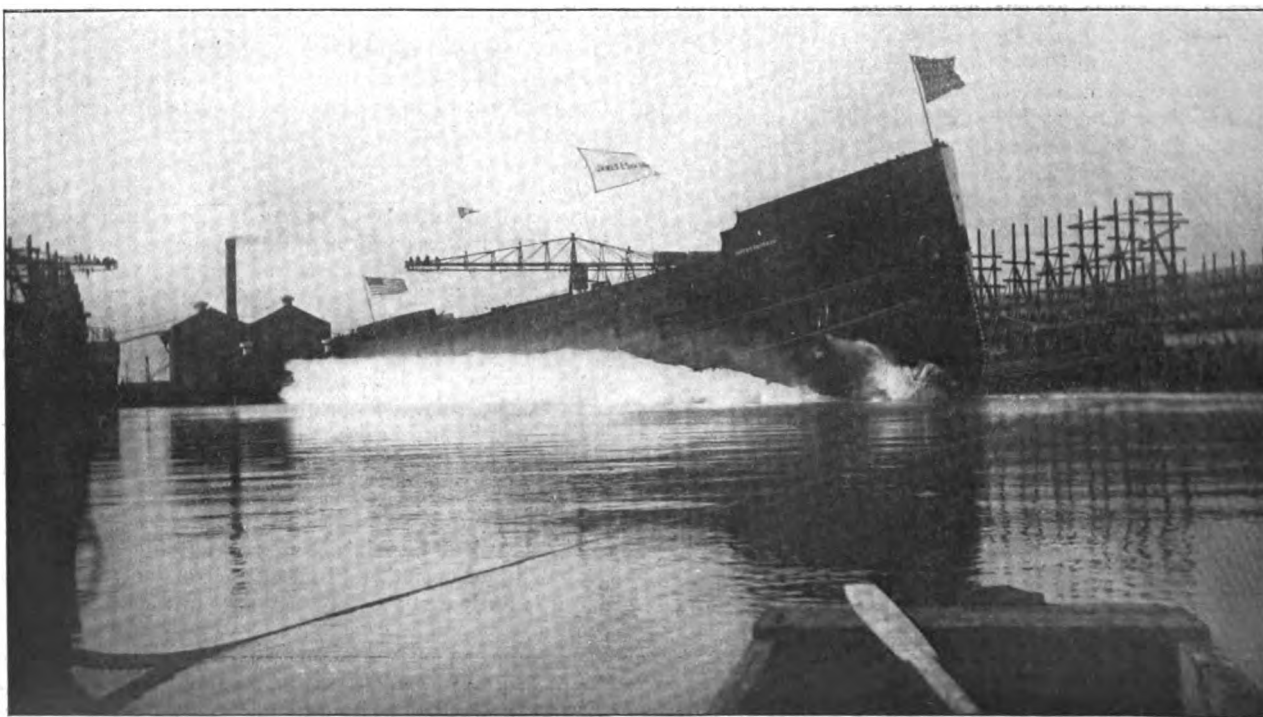
THE JAMES E. DAVIDSON ON THE STOCKS AT THE YARD OF THE GREAT LAKES ENGINEERING WORKS. THE WESTERN TRANSIT LINER SUPERIOR IS ON ONE SIDE OF HER AND A 200-FT. SECTION OF THE FLOATING DOCK ON THE OTHER SIDE.

Two Splendid Launches

Probably the interchange of courtesies among the ship yards in Detroit on Saturday last was quite as important in its moral effect as were the launches themselves in the physical contribution of two great ships to the active fleet of the lakes—that is to say there was better feeling, better understanding and more real appreciation of each other's worth after the

launches than before them. This is what the interjection of social intercourse into business life frequently does and it certainly did it at Detroit.

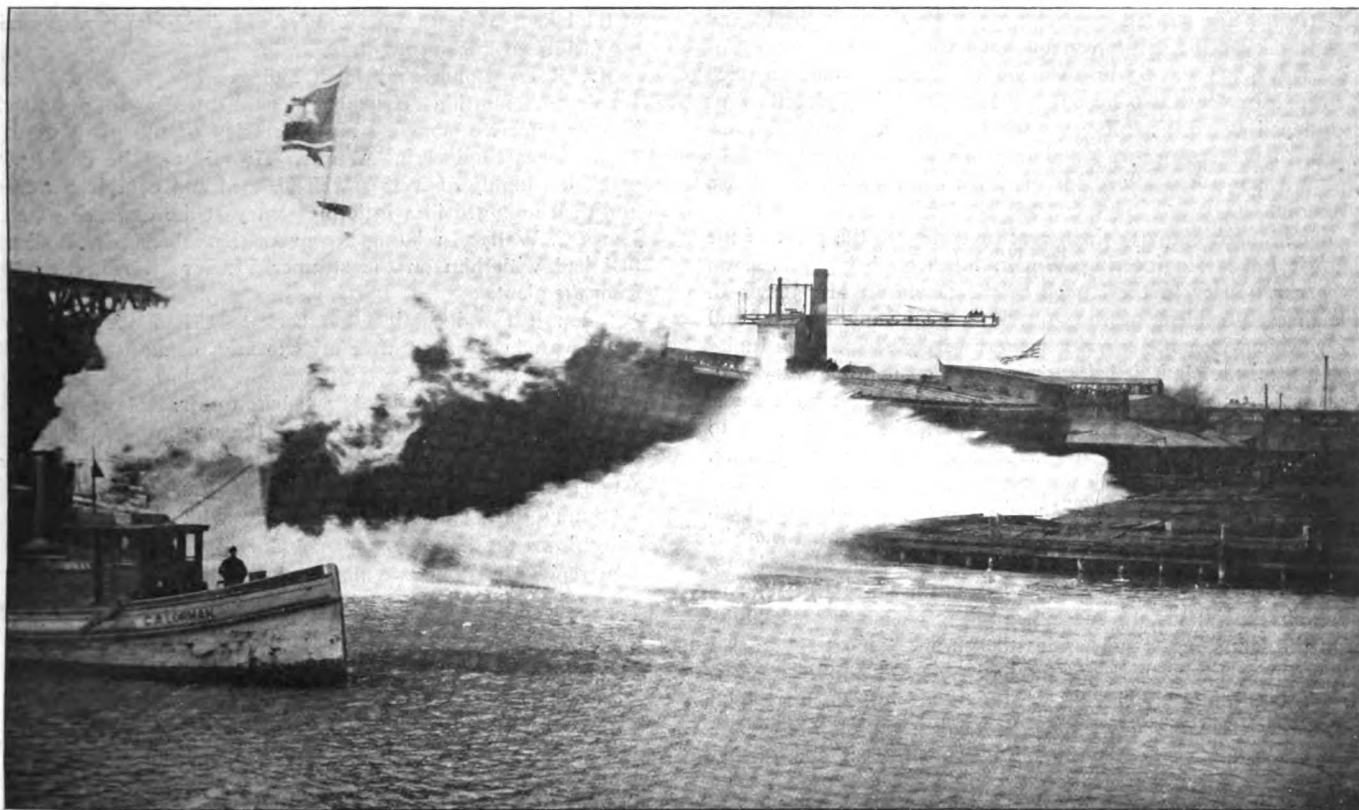
The Amasa Stone, launched at the Wyandotte yard of the American Ship Building Co. and the James E. Davidson, launched at the Ecorse yard of the



TAKEN AS THE JAMES E. DAVIDSON WENT OVERBOARD AT THE YARD OF THE GREAT LAKES ENGINEERING WORKS.

Great Lakes Engineering Works are the largest of the 200 ships that have been launched on the Detroit river. The Amasa Stone, building for Pickands, Mather & Co., of Cleveland, was launched at noon and the James E. Davidson, build-

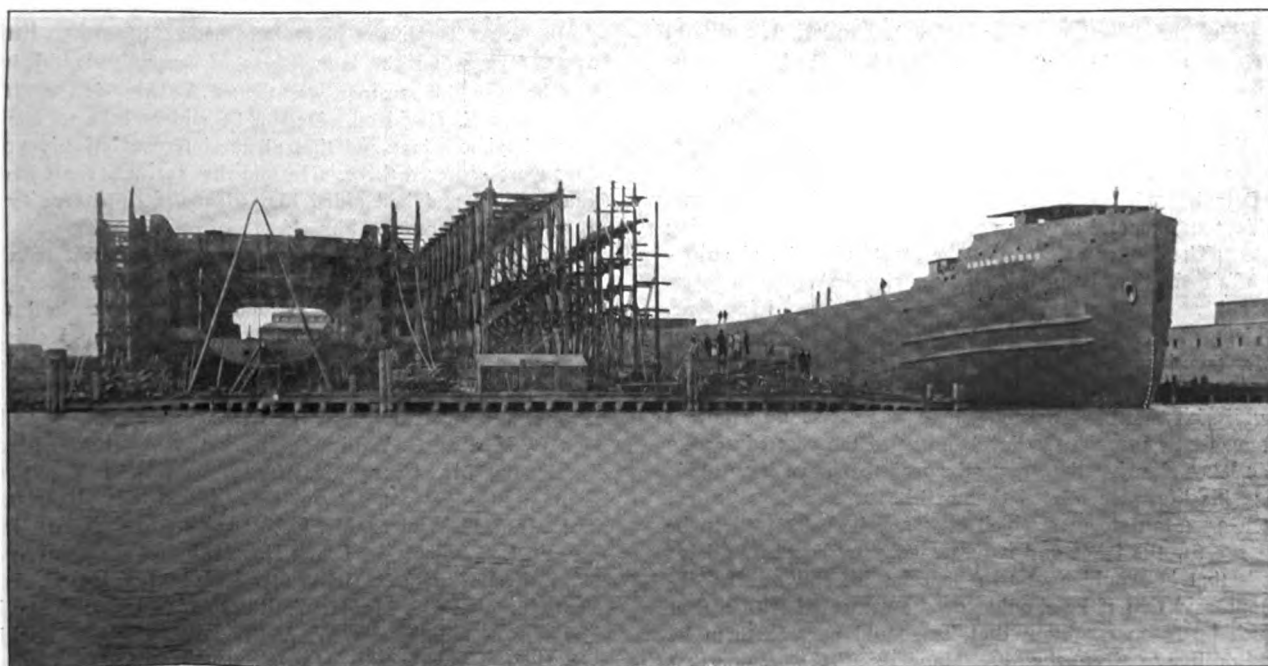
and the ships taking the water on an even keel, to the usual noisy accompaniment of every steam whistle along the water front. The Amasa Stone was christened by Mrs. Jay C. McLauchlan, the wife of the Detroit representative of Pickands,



LAUNCH OF THE AMASA STONE AT THE WYANDOTTE YARD OF THE AMERICAN SHIP BUILDING CO. JUST AT THE MOMENT OF EXPOSURE THE TUG IN THE FOREGROUND WHISTLED, THE ESCAPING STEAM BLOTTING OUT WHAT WOULD OTHERWISE HAVE BEEN A SPLENDID VIEW.

ing for Mr. G. A. Tomlinson of Duluth, was launched at three o'clock. This was a part of the program whereby the courtesies of one yard might be extended to the other and it worked out very well indeed. Both launches were in every way successful, there being no mishap of any kind whatever

Mather & Co., and the launching party consisted of Mr. James C. Wallace, Mr. Robert Wallace, Mr. Robert Logan, Mr. Harry Coulby, Mr. and Mrs. Arthur M. Parker, Mr. and Mrs. Henry B. Lewis, Mr. and Mrs. Wm. McLauchlin, Mr. Jay C. McLauchlan, Mr. George H. Barbour, Mrs. N. G. Williams,



THE AMASA STONE TAKEN A FEW MINUTES AFTER THE LAUNCH AT THE WYANDOTTE YARD OF THE AMERICAN SHIP BUILDING CO

Miss Eloise Williams, Mr. and Mrs. Edward H. Parker, Capt. Joseph Kidd, and Capt. J. J. H. Brown of Buffalo.

Mr. Charles B. Calder, general superintendent of the Detroit Ship Building Co., superintended the launch of the Amasa Stone. The Stone is the largest steamer ever constructed at Detroit, being 545 ft. over all, 525 ft. keel, 55 ft. beam and 31 ft. deep. She will have triple-expansion engines with cylinders 23½, 38 and 63 in. diameters by 42 in. stroke, supplied with steam from two Scotch boilers, 14 ft. 6 in. by 11 ft. 6 in., equipped with Ellis & Eaves' draft and allowed a working pressure of 185 lbs. per sq in. The Stone will be commanded by Capt. George B. Mallory and her chief engineer will be Alonzo Arnold.

The launching party then went by trolley to the plant of the Great Lakes Engineering Works, luncheon being served on the car. Prior to the launch of the Davidson Mr. James C. Wallace, president of the American Ship Building Co., and Mr. Robert Logan, general manager, were given an opportunity to inspect the plant, it being their first visit to it and they both expressed themselves as surprised at its size and completeness. Meanwhile the Davidson launching party had been taken to the Great Lakes Engineering Works on the steamer Pleasure. Promptly at three o'clock the steamer James E. Davidson was put overboard and was christened by Mrs. James E. Davidson. This vessel is named for her husband and so desirous was she of making the christening effective that she smashed the bottle with such vigor as not only to christen the launch well but to drench the immediate spectators with the effervescent fluid. On the launching stand besides the guests from the launch of the Amasa Stone were Mr. and Mrs. G. A. Tomlinson, Mr. and Mrs. James E. Davidson, Mr. A. C. Pessano, Mr. John R. Russel, Mr. and Mrs. C. J. Bostfield, Mr. and Mrs. W. L. Clements, Mr. J. C. Weadock, Mr. Frinkinstadt and Mr. F. J. Buckley, all of Bay City; Mr. Wm. Livingstone, Mr. Wm. E. Quinby, Hon. Don M. Dickinson, Mr. Walter H. McGean, Mr. George Russel, Mr. George L. Craig, Mr. Frank Hoover, Mr. Wm. A. Prime, Miss Florence Livingstone, Miss Bessie Avery and Mr. Harry Duffield.

The Davidson is 524 ft. over all, 504 ft. keel, 54 ft. beam and 30 ft. molded depth. She will have quadruple-expansion engines with cylinders 18, 27, 40 and 62 in. in diameters by 42 in. stroke, supplied with steam from two Niclausse water-tube boilers, 13 ft. by 9 ft., fitted with induced draft and allowed a working pressure of 250 lbs. The launch of the Davidson was under the direction of Mr. John A. Ubsdell, Jr., general superintendent of the Ecorse plant. Capt. F. A. Fick will be master of the Davidson and Mr. Frank Schwartz will be her chief engineer.

At the conclusion of the launch the party returned to Detroit on the steamer Pleasure and were tendered a dinner at the Detroit Club as the guests of Mr. Antonio C. Pessano, president and general manager of the Great Lakes Engineering Works. The dinner was one of the most spirited and enjoyable affairs in the history of lake launches. Acting as toastmaster Mr. Pessano first introduced Mr. Wm. Livingstone, president of the Lake Carriers' association as the preceptor of Mr. Tomlinson, Detroit being the scene of Mr. Tomlinson's early struggles and Mr. Livingstone being the first man to recognize his merit. Mr. Livingstone was especially happy in his remarks and traced the development of the vessel interests of the lakes showing the great advances that have been made during his life. He related that in his younger days he had built a 3,000-ton steamer which everyone had declared to be too large for the lakes and it was sagely predicted by all his friends that he would have to repent for his folly. Mr. Livingstone said that if he should now be presented with a fleet of such boats on condition that he should operate them he would decline to accept the gift. He ventured the opinion that within five years the great lakes would see the 20,000-ton

steamer and based his prediction upon the fact that the government is steadily deepening the channels of the lakes and that the harbor facilities are gradually being made adequate to accommodate the great type of steamer. He paid a fine tribute to Mr. Tomlinson as one of the successful young men of the lakes, saying that his success was due to hard work and his faculty of sticking to it.

Mr. Harry Coulby, president and general manager of the Pittsburg Steamship Co., who was next called upon, described in very effective language his impression of the plant of the Great Lakes Engineering Works. He said that he could not speak too highly of it as a well planned and complete works and then indulged in a little pleasantry at the expense of Mr. James C. Wallace, relating a conversation which Mr. Wallace had had with him on the steamer Pleasure during the trip from the plant.

"You just wait until I get back to Cleveland," said Mr. Wallace, "when I'll get after my executive committee. I'll tell them some things."

Mr. George H. Russel paid a tribute to Mr. Robert Wallace, declaring him to be the father of the present ship building industry of the great lakes and closing with the words "I offer a toast to Robert Wallace and his son Jim."

"Sunny Jim," chimed in Mr. Coulby with such effect as to bring down the house.

In reply Mr. Robert Wallace related his early experiences as a ship builder on the lakes, saying very modestly that he had merely advanced along with the industry.

Mr. James C. Wallace was especially felicitous in his remarks. He thanked Mr. Pessano for the opportunity of breaking bread with new found friends.

"I must acknowledge," said he, "that at last I have a real competitor and desire to make a public announcement of that fact. You have a fine plant and I frankly admit that I was surprised at what I saw. Ship building on the lakes is a sound industry and I see no reason why both of us cannot get work enough to do without either of us accepting it at ruinous prices."

Mr. W. I. Babcock in a brief sketch touched upon the possibilities of larger tonnage for the development of great lakes but gave warning that before any ships of greater dimensions than those now building were attempted the channels of the lakes should be deepened.

Mr. G. A. Tomlinson of Duluth made a touching little address, saying that the launch was of especial significance to him because the steamer was named for his dearest friend, Mr. James E. Davidson. Detroit he said had been the scene of his boyhood days and that all the interests of his younger days were centered there. He said that various men had been kind to him and had aided him when the opportunity came to go into business for himself.

Mr. James E. Davidson, who brought the banquet to a close, spoke from the standpoint of the wooden ship builder, saying that as wooden ships were becoming extinct he had turned from being a builder of them into a buyer of steel ships.

Those present at the dinner were: Mr. and Mrs. James E. Davidson, Mr. and Mrs. C. A. Tomlinson, Mr. and Mrs. Jay C. McLauchlan, Mr. and Mrs. W. L. Clements, Mr. Harry Coulby, Mrs. N. G. Williams, Miss Eloise Williams, Mr. S. J. Tomlinson, Mr. George H. Russel, Mr. Wm. Livingstone, Capt. J. J. H. Brown, Mr. John A. Ubsdell, Mr. Robert Wallace, Mr. J. C. Wallace, Mr. Robert Logan, Mr. Henry Penton, Mr. W. I. Babcock, Mr. Frank Hoover, Mr. Wm. McLauchlan, Mr. Robert H. Plumb, Mr. Walter S. Russel, Capt. F. A. Fick, Capt. Joseph Kidd, Mr. Henry Russel, Mr. Harold Davidson, Mr. Wm. E. Quinby, Mr. W. A. Prime, Hon. D. A. Dickinson, Mr. Walton H. McGean, Mr. John H. Avery, Mr. George H. Barbour, Jr., and Dr. and Mrs. Parker.

AROUND THE GREAT LAKES

The Anchor Line will be ready to receive freight at Lake Erie ports April 10.

Rear Admiral Craig has been installed as commandant of the League Island navy yard.

Capt. Charles Carland and his crew of eight men will open the Chicago life saving station for service on April 1.

The old steamer Inter-Ocean which has been lying in the Erie (basin) Buffalo, has been sold to J. Lenahan, a scrap iron dealer.

The Detroit & Cleveland Navigation Co. will probably open navigation between Detroit and Cleveland at the end of the present week.

Mr. Wm. Penje of Chicago has been re-elected general secretary of the Seamen's union. Thomas Hansen of Chicago was elected treasurer.

It is announced that the new Northwestern ore dock at Ashland will be completed in time to begin shipments at the opening of navigation.

The steamer Desmond owned by the Kelley Island Lime & Transport Co. has been sold to Detroit parties by C. P. Gilchrist & Co. of Cleveland.

Mr. Lyman M. Beggs, formerly bookkeeper for the Escanaba & Lake Superior Railway, has been engaged as manager of the Stephenson dock, Escanaba.

The new steamer Hoover & Mason building at the yard of the Great Lakes Engineering Works will carry Steel Corporation ore during the coming season.

The Neafie & Levy Ship & Engine Building Co. launched recently a tug for the quartermaster's department of the United States army. She is 110 ft. long, 24 ft. beam and 13 ft. deep.

The steamer Victoria belonging to the Detroit, Belle Isle & Windsor Ferry Co. having been thoroughly overhauled has resumed her route in the ferry service between Detroit and Windsor.

The steamers Charles H. Hackley and Alice Stafford of the Chicago & Michigan Transportation Co. will be sold April 6 to the highest bidder by Deputy United States Marshal Edward O'Donnell.

The Pittsburg Coal Co. recently purchased the Jones & Adams coal dock at Ashland making extensive improvements in it and it is expected that the coal receipts at Ashland will be largely augmented this year.

B. C. Tucker has been appointed Cleveland agent for the Rutland Transit Co. Mr. Tucker also represents the Sault Line and the steamers of both companies will use the Anchor Line dock at No. 23 River street.

The steamer Lakeside which ran between Toronto and Port Dalhousie, sank at her moorings at Port Dalhousie last week. She is held to the dock by her lines and chains. It is supposed that the sea-cock was left open.

La Provence, a splendid new ship of the French Line, was launched recently at St. Nazaire. She is the largest French ship afloat, being 19,119 tons, exceeding the tonnage of the largest French battleship Patrie by 4,500 tons.

Plans for the new ice crushers have been approved by Mayor Weaver of Philadelphia and the initial appropriation of \$25,000,000 has been made by the council for their construction. The two are expected to cost about \$600,000.

The Philadelphia & Reading Railway Co. has decided to increase its ocean fleet and has asked bids of the Pennsylvania Steel Co. for five steel barges and one or two ocean tugs. The Reading Co. now possesses the largest ocean fleet now owned by any of the anthracite coal roads.

Mr. Alex. Winton of Cleveland is building a motor boat by designs from Crowningshield. The boat will be 40 ft. long and 4 ft. beam and is to be equipped with twelve motors of 150 H. P. The motors are to be installed in Cleveland and the

boat will be tried on Lake Erie. It is expected to make 30 miles an hour.

The steamer George H. Russel building for the Gilchrist Transportation Co., at the St. Clair plant of the Great Lakes Engineering Works will be launched on April 15 and the steamer Hoover & Mason, building for Mr. G. A. Tomlinson at the Ecorse plant of the Great Lakes Engineering Works, will be launched on April 29.

Mr. A. R. Rumsey, chief shipping master for the Lake Carrier's association, has appointed the following shipping masters for the various ports: Capt. Samuel Gould, Ashtabula; Albert Limerick, Buffalo; W. M. Ford, Conneaut; G. E. Nesbitt, Chicago; C. B. Morse, South Chicago; Angus McKee-gan, Toledo, and Charles Wall, Cleveland.

The Marine Cooks and Stewards' union has re-elected all its officers. The largest vote was polled this year of any year in the past. The officers are: General secretary, R. H. Walker, Buffalo; general treasurer, E. E. Turner, Buffalo; agents, John Eagan, Milwaukee, Samuel Little, Chicago, J. M. Secord, Cleveland, and D. English, Ashtabula.

The hull of the lumber schooner Massasoit which has been hanging on the inlet pier of the Buffalo waterworks during the winter broke in two last week and was swept down the river. The keepers of the International bridge think that the hull did not pass the bridge and that it therefore must be somewhere in the channel leading to Tonawanda.

Extensive improvements are being made in Buffalo river from the Ohio street swing bridge to the property of the Buffalo Union Furnace Co. A new dock 500 ft. in length is being built by the furnace company to care for its growing business. The Buffalo Dredging Co. is deepening the channel and when it is finished it is expected that the deep draught vessels can move up the stream.

At a meeting of the Association of Lake Lines held in the office of Commissioner C. C. McCain at Buffalo this week, the lake rates in effect last year were re-adopted for this year. The lines represented were the Western Transit Co., Anchor Lin. Mutual Transit Co., Lehigh Valley Transportation Co., Rutland Transit Co., Union Steamboat Co., Soo Line, Detroit & Buffalo Line and Cleveland & Buffalo Line.

A conference will be held in Cleveland on Tuesday next between the representatives of the Licensed Tugmen's Protective Association and the Great Lakes Towing Co. This will be the second meeting of the company with its men. Last January a conference was held at Detroit when the men demanded every other night and every other Sunday off, but the company felt that it could not grant it when negotiations were declared off. The present contract expires on April 1.

The deepening and safeguarding of the St. Lawrence river is a subject in which Canadians are vitally interested. A channel 30 ft. deep and 350 ft. wide at the narrowest part of the river between Quebec and Montreal will, it is stated, be completed as far as Batiscan this year, leaving twenty miles to be dealt with next year. Attention is also being devoted to the channel below Quebec so that the largest steamships may be navigated at any hour of the twenty-four without waiting for the tide.

The contract of Holden & Sons to handle the coal business of the Lackawanna Railroad in the Oswego district will expire on April 30 and will not be renewed. On May 1 the railroad company will assume the entire management of its own coal business in Oswego, Syracuse and other places, establishing sales offices for that purpose. The Lackawanna coal has been handled in a large part of New York state by the Holdens exclusively for thirty-five years. At present this agency delivers Lackawanna coal as far east as Worcester, Mass., as far west as Niagara Falls and north into the Dominion of Canada, many thousand tons being shipped from Oswego every year.

THE EVOLUTION OF LAKE TRADE

Buffalo, March 28.—This is a fast and furious age and the history of the lake trade throughout and of the lake steamer especially is as much in proof of the statement as any other industry. I have been an even quarter of a century in pretty close observation of the lake business and if I had set up at the start as a prophet and shown the half that has been accomplished in the lake traffic I would have been regarded as something of a lunatic and entirely devoid of business sagacity. At the same time I am not sure that we are at all near the end of the development. In fact it has increased of late rather than fallen off and there is nothing that looks like a checking of it anywhere in sight.

I went into a vessel owner's office the other day and he began to speak of these things in a sort of uneasy way. It was all well enough in the case of a wooden vessel for these new things to make their appearance in such a hand-over-hand fashion, for the first life of such a craft goes with its first ten years and by the time it is twenty it is mostly a soft-hulled affair that has difficulty about its insurance rating—that is, it did before the days of steel hulls, which have left all wooden craft yet in existence quite out of the water, so to speak.

But it was the steel bottom that the vessel owner was troubled about. He had long ago given up any speculation over wooden vessels. "I tell you," said he, "that we had better hurry up and get our new boat out as soon as possible or she will be out of date before she has carried a cargo." And then he went on to say that he was informed that the latest frills in 500-ft. steamers were in the line of elegant outside accommodation for the captain and his favored half-dozen passengers. The telescope hatch cover that shuts up like a book, the electric light at every turn, the jack-knife bridge, are all old now. What the vessel owner had in mind was an outfit of glass that he had heard was to be thrown about the captain as he stood watching the course of the vessel and another glass apartment for the guests, so that they could all see everywhere about them and not be exposed to any of the approaches of the scythe-edged zephyrs that abound on the water. The days when the steamer comes in with the captain in oil skins just able to see above an improvised canvas wind break that is fringed with ice are also over, then. He is a bit of canned fruit now. It is well.

But jests and fads and frills aside, this search for novelty is what has made the lake trade what it is. There may have been some extravagances, but in the main the progress has been made not only along utilitarian lines, but it has been compelled by the demands of the traffic. It has been made necessary if any money was to be made in the business. Let us suppose that we were today handling ore as we were twenty-five years ago in vessels carrying not more than 2,500 tons, many of them still under sail. Who would consider it worth the while to fit out this spring with chances thus afforded before him? That is, if the margins of profit had been drawn down as close as they generally have been and the railroads had been as aggressive? Better make bonfires of the fleet.

And so it has come about that the inventor with anything on his list that promises to do this or avoid doing that at a smaller cost or a greater speed than anything going has only to make his device known and he is wanted. The business cannot afford to get along without him. They say in Europe that next to our fast rate of speed the next thing that aids us in taking the industrial and business lead in so many things is that we know the value of the scrap heap.

This is one reason why a vessel owner is today putting his money into 500-ft. steel vessels when he has on his list perhaps a half dozen wooden ones that will find it just so much harder to make expenses. They say that half the vessels coming in here are still wood, but that is not saying, of

course, that they represent half the tonnage. Tonawanda gets little yet but wooden service, but that is on account of the shallow Niagara channel and the size of its lumber trade. There seems to be a race on now between wooden vessels and the lake lumber trade as to which shall give out first. It is a sad condition of things, though if we could make the shift from lumber as readily as we have from wooden vessels there would be no distress.

They are saying these days more and more that wars are the inevitable compellers of advancement and must go on and it seems that degeneration and destruction are the chief spurs to business. Seize upon new things that make for progress and turn your back upon everything in the way, no matter how much it has cost you, or you are out of the race.

JOHN CHAMBERLIN.

APPOINTMENTS OF MASTERS AND ENGINEERS

Western Transit Co., Buffalo, N. Y.: Steamers—Boston, Capt. H. L. Dennis, Engineer Patrick Welch; Buffalo, Capt. John Fisher, Engineer James Sangers; Chicago, Capt. Thomas Slattery, Engineer John W. Rainey; Commodore, Capt. M. Folan, Engineer John Metke; Duluth, Capt. E. R. Jones, Engineer F. A. Miller; Milwaukee, Capt. F. D. Osborne, Engineer J. W. Mark; Mohawk, Capt. Henry Murphy, Engineer C. L. Murray; Superior, Capt. Donald Gillies, Engineer —; Syracuse, Capt. John Kennedy, Engineer Dan Donahue; Troy, Capt. Robert Murray, Engineer Fred W. Hale; Utica, Capt. John Davis, Engineer Henry Hess. Barges—Ben Brink, Capt. Axel Ruske; Grey Oak, Capt. Roderick Almy.

Goodrich Transportation Co., Chicago, Ill.: Steamers—Christopher Columbus, Capt. Charles E. Moody, Engineer G. McLaughlin; Virginia, Capt. E. E. Redner, Engineer G. P. Roth; Indiana, Capt. E. Taylor, Engineer, Wm. Nicholas; City of Racine, Capt. J. A. Wilson, Engineer Felix Neider; Iowa, Capt. John Raleigh, Engineer Julius Bushmann; Atlanta, Capt. C. McCauley, Engineer Joseph Peroutka; Georgia, Capt. Charles Bronson, Engineer C. H. Bon; Sheboygan, Capt. A. E. Johnson, Engineer A. Galbraith; Chicago, Capt. —, Engineer Thomas Dorey. Tug Arctic, Capt. B. Sniffen, Engineer C. Germanson.

Hall Coal Co., George, Ogdensburg, N. Y.: Steamers—John C. Howard, Capt. D. Hourigan, Engineer D. M. Doyle; John Pugee, Capt. R. Fitzgerald, Engineer A. E. Cline; Hecla, Capt. W. A. Russell, Engineer R. G. Jardin. Tug Wm. L. Proctor, Capt. Joseph Richard, Engineer Joseph W. Estes. Schooner—W. A. Sherman, Capt. M. Hourigan. Barge;—Bolivia, Capt. Ed. W. Maloney; Mary Lyon, Capt. S. La Flam; Jennie Mathews, Capt. F. D. Lurn; Black Diamond, Capt. John Gokey; Mohawk, Capt. Alfred H. Michael; Onondaga, Capt. Alfred de Repentigney; E. B. Beals.

Bradwell, Thomas, Chicago, Ill.: Schooners—J. B. Wilbor, Capt. Frank McGregor; A. Bradley, Capt. John Hodell; Norman, Capt. Robert McGregor. Tugs—V. Gray, Capt. Wm. Brown, Engineer Thomas Corrigan; Leslie, Capt. C. Chapman, Engineer D. Fritz; J. B. Bradwell, Capt. George McDonald, Engineer Robert Ragan. Scow—Buble Creek, Capt. John May, Engineer James Wilton.

Pauly, H. J., Milwaukee, Wis.: Steamers—Thomas Davidson, Capt. H. Oertling, Jr., Engineer Thomas Martin; John Duncan, Capt. Wm. McLean, Engineer B. Aldrich; Walter Vail, Capt. John McAvoy, Engineer —; Harkem, Capt. Edward Hendricks, Engineer —. Schooners—Aberdeen, Capt. Thomas Leisk; Baltic, Capt. Andrew Peterson.

Smith Co., L. P. & J. A., Cleveland, O.: Steamer—Rhoda Stewart, Capt. G. W. Ferguson, Engineer L. Gelimas. Barges—Wm. Grandy, Capt. David Gleason; Constitution, Capt. A. McWillis; N. P. Baldwin, Capt. Wm. Kelley; Mikado, Capt. F. Jennings; Agnes L. Potter, Capt. John Nelson.

Teagan Bros., Detroit, Mich.: Steamers—Sancoa, Capt. J.

B. Maddock, Engineer James Bennett; H. S. Pickands, Capt. H. B. Leonard, Engineer Fred Vieau; Chauncey Hurlbut, Capt. Joseph Parsons, Engineer Frank Langer. Schooner D. K. Christ, Capt. Bert Peltier.

Port Huron & Sarnia Ferry Co., Port Huron, Mich.: Steamer—O. D. Conger, Capt. Wm. G. Major, Engineer Wm. Waugh; Hiawatha, Capt. E. M. Thomas, Engineer John Lee; Grace Dormer, Capt. George Waugh, Capt. John Kinine.

Runnels, H. E., Port Huron, Mich.: Steamers—Maggie Duncan, Capt. James Cassin, Engineer Gill McLellan; O. O. Carpenter, Capt. Guy Geel. Barges—Favorite, Capt. L. Sinclair; E. E. Tyson, Capt. C. W. Annis.

Red Star Line, Buffalo, N. Y.: Steamers—Robert Mills, Capt. F. A. West, Engineer W. T. Taylor; Wyoming, Capt. J. C. McLean, Engineer George M. Bohnert; Cuba, Capt. Robert Young, Engineer S. E. Furey.

O'Connor, James, Tonawanda, N. Y.: Steamer—Birkhead, Capt. James Heffron, Engineer Edward Knibble; barges—F. D. Ewing, Capt. Hugh Ottagen; J. I. Case, Capt. A. Mills.

Kelly, W. N., Traverse City, Mich.: Steamer—Emma E. Thompson, Capt. H. Bennett, Engineer Frank Kimber; Schooner—Ford River, Capt. L. Madsen.

The Marine Transportation Co., Ogdensburg, N. Y.: Steamer—Nipigon, Capt. David Hutcheson, Engineer John Kanada.

Erickson, Capt. James, Milwaukee, Wis.: Schooner—Lake Forest, Capt. James Erickson; Hattie Hutt, Capt. M. Mathewson.

Ohio Cooperage Transportation Co., Cleveland, O.: Steamer—Monohansett, Capt. D. A. Kendall, Engineer —.

Toomey, Daniel F., Dunkirk, N. Y.: Steamer—City of Grand Rapids, Capt. John W. Averill, Engineer —.

Timothy Hurley, Detroit, Mich.: Schooners—Mystic Star, Capt. Thomas O'Brien; Mongaugon, Capt. H. H. Pope.

Neff, Charles S., Milwaukee, Wis.: Steamer—Charles S. Neff, Capt. J. A. Doak, Engineer S. L. Newnham.

Nipigon Transit Co., Claireview, Mich.: Steamer—J. C. Ford, Capt. N. L. Morrison, Engineer H. Manion.

Charles Beyschlag, St. Clair, Mich.: Steamer—America, Capt. Henry Leisk, Engineer Clinton J. Trumble.

MacArthur Bros. Co., Detroit, Mich.: Steamer—Tecumseh, Capt. Alex. Anderson, Engineer A. E. Kennedy.

Forster, C. F., Milwaukee, Wis.: Steamer—J. W. Wescott, Capt. H. L. Wanwig, Engineer Wm. Martin.

Baumhart, C., Vermillion, O.: Schooner—M. I. Wilcox, Capt. Joshua Bailey.

NAVY DEPARTMENT AWARDS

The following awards have been made for furnishing supplies for the Mare Island and Puget Sound navy yards: Ely Machinery Co., San Francisco, one 28-in. bevel band saw machine, \$2,004; Pacific Tool & Supply Co., San Francisco, one upright drill press, \$129; Caldwell Bros. Co., Seattle, Wash., one single gear crank shaper, \$260; Haddidoe-Henshaw-Bulkley Co., Seattle, Wash., one screw extension gap lathe, \$505.

The following awards have been made for machine tools for the Eastern navy yards:

Niles-Bement-Pond Co., New York, one single surface planer, \$4,884; one speed lathe, \$68; one 25-in. upright drill, \$348; one twist drill wet drive, \$119; one motor drive outfit for pipe threading and cutting machine, \$475; one spindle guard vertical cutting machine, \$354, one motor driven pipe threading and cutting machine, \$889; one copper pipe bender, \$923; one 125-ton hydraulic furnace jack, \$243.

Fairbanks Company, New York, one double emery wheel grinder, \$2,669; one single sliding head drill, \$140; one 16-in. by 10-ft. engine lathe, \$377.

Manning, Maxwell & Moore, New York, one 14-in. by 10 ft. engine lathe, \$735; one 16-in. back geared crank shaper,

\$650; one sensitive drill, motor driven, \$100; one cutter and reamer grinder, \$80; one emery grinding machine, \$40; one grindstone frame, \$60; one band sprue saw, \$60.

Fox Machine Company, Grand Rapids, Mich., one wood trimmer, \$68.

Vermilye & Power, New York, one 12-in. centrifugal pump, \$449.50.

Drew Machinery Agency, Manchester, N. H., one single end tenoning machine, \$195.

Ames Iron Works, Boston, Mass., one 60-H. P. portable water bottom locomotive boiler, \$630.

Erie Mfg. & Supply Co., Erie, Pa., one 100-H. P. simple self oiling engine, \$1,150.

Lidgerwood Mfg. Co., New York, one 6 H. P. swinging engine, \$367.

Henry R. Worthington, New York, one 100 H. P. heater, feed water, complete, \$91.50.

Hendy Machine Co., Torrington, Conn., one universal machine, motor driven, \$825.

Geo. A. Ohl & Co., Newark, N. J., one motor drive outfit for Ohl sheet metal press, \$285; one motor drive outfit for Ohl triple back geared power roll, \$225; one motor drive outfit for Ohl squaring shear, \$395.

Geo. Place, New York, one single surface planer, \$585.

Mitts & Merrill, Saginaw, Mich., one key seating machine, 19-inch stroke, motor driven, \$808.

Handlan-Buck Mfg. Co., St. Louis, Mo., one motor driven engine lathe, \$780.

Holtzer-Cabot Electric Co., Brookline, Mass., on 2 H. H. electrical grinder, \$220.

Motley, Green & Co., New York, one steam driven hoisting engine, \$1100.

Rockwell Engineering Co., New York, one oil fired plate heating furnace, \$3,080.

Geo. F. Blake Mfg. Co., New York, one horizontal mining pump, \$144.

Electric Launch Co., Bayonne, N. Y., two electric launch equipments, \$6,974.

Allington & Curtis Mfg. Co., Saginaw, Mich., class 42, two dust collecting systems, \$2,312.

Scully Steel & Iron Co., Chicago, Ill., class 44, one machine for expanding and flanging pipes of all classes, \$3,565.

Camden Iron Works, Camden, N. J., class 47, one 250-ton forcing press, \$540; class 48, one 125-ton bar straightening press, \$580; class 50, one suspended platform type hydraulic accumulator, \$1,565.

H. A. Rogers Co., New York, class 49, one bushing press, \$341.

LAUNCH OF PERRY'S ARCTIC SHIP

Lieut. R. E. Perry's Arctic steamer was launched last week at the yards of McKay & Dix, Bucksport, Me., and was christened Roosevelt by Mrs. Perry. The vessel was designed by Mr. W. E. Winant, naval architect of New York, and is considered the best equipped craft for its purpose ever built. The Roosevelt is a three-masted fore and aft schooner-rigged vessel with auxiliary sail power, being 182 ft. over all, 35 ft. beam and 16 ft. deep. Its model is similar to modern built steam whalers but rather more sharp, the particular features being its long high raking bow, overhanging stern and general wedge shape at the sides in order that pressure may lift it if caught in the ice. The vessel is built of white oak, the frames being treble and close together with double plank-ing, making the walls from 24 in. to 30 in. thick. The keel is 16 in. thick but false keels and keelsons form a backbone projecting 6 ft. under the entire length of the vessel. The bow is backed up 12 ft. of solid deadwood. The engines are expected to develop 1,500 H. P.

ITEMS OF GENERAL INTEREST

W. H. Mullins Co., Salem, O., are erecting a large testing tank for testing motor boats.

The two battleships just authorized by congress will be named Michigan and South Carolina.

The dredges Hercules and Gladiator, owned by M. Sullivan of Detroit, have begun work for the season on the lower Detroit river.

R. T. Green & Son, Chelsea, Mass., launched a mammoth scow for the Eastern Dredging Co. last week for use in the harbor of Boston.

It is understood that the North German Lloyd has contracted for two new steamers, one to be built at Stettin and the other at Bremerhaven.

Mrs. C. F. Barnes, head of the Wallace-Barnes Manufacturing Co., Bristol, Conn., is building a handsome power boat for service on Bantan Lake.

The Maryland Steel Co. will install the machinery in the large dredge General A. McKenzie, building for the Furst-Clark Dredging Co., Baltimore, at Orange, La.

Extensive improvements are being made in the plant of the Harlan and Hollingsworth Co., Wilmington, Del., which when completed will make this plant thoroughly up-to-date.

Capt. Lewis Lautenslager, manager of the Great Lakes Towing Co. at Buffalo, spent a fair share of last week trying to make a navigable channel through the ice in Blackwell canal.

Lovejoy Bros., Coupeville, Puget Sound, will build the hull of the new tug for which contract was recently awarded to the Puget Sound Engine Works by the United States army quartermaster's department.

Contract has been given to the Cramp's at Philadelphia to build a new freight and passenger steamer for the Ward Line of New York. The new liner is to be 404 ft. long, 50 ft. beam and of 7,000 tons displacement.

Major J. C. Sanford, government engineer at Philadelphia will repair the government dredge Hell Gate which is to be used in connection with the testing of a 30-ft. channel in the Detroit river through Schooner ledge.

R. M. Leathers, Astoria, Ore., has given an order to build a gasoline launch for the Columbia River Packers' association. The launch will be 50 ft. long, 12 ft. beam, 4 ft. 5 in. deep and is to be used as a cannery tender.

Miss Rose Marie Schaller, daughter of State Senator Albert Schaller of Hastings, Minn., has been selected by Governor Johnston to christen the new battleship Minnesota which is to be launched at Newport News on April 8.

The new Japanese battleship Kashima was launched last week at the Elswick Ship Building Yard. The Kashima is of 16,400 tons displacement and her main battery consists of four 12-in. guns, four 10-in. guns and twelve 6-in. guns.

It is announced that the Detroit Southern will begin work upon the construction of gravity yards and coal docks at Toledo at once. Two years ago a sixty-acre tract was purchased by the company along the river front in anticipation of its building a line into Toledo.

Work on the four new Staten Island boats building by the Maryland Steel Co., Sparrow's Point, Md., is being pushed forward. One of them will be launched early in April. The fifth boat for this service is being built by the Burlee Dry Dock Co., Port Richmond, Staten Island.

The International Wrecking Co. of Fall River, Mass., has purchased the wreck of the coal barge Santiago sunk last fall in the harbor of Refuge, Delaware Bay. The owners had abandoned the wreck to the underwriters. Charles Johnston of Lewes, Del., has been awarded the contract to remove the wreck of City ice boat No. 3 which lies on top of the barge.

The navy department is confronted with the necessity of seeking out and promptly destroying no less than twenty ocean derelicts which are floating in the great ocean lines from San-

tiago to Newfoundland. The presence of these floating wrecks has been reported to the hydrographic office by incoming vessels. It is likely that a special ship will be assigned to this purpose.

The Thames Tow Boat Co., New London, Conn., has given a contract to the Robert Palmer & Sons Ship Building Co., Noank, Conn., to construct the hull of the ferry boat for service between New London and Groton. The machinery will be supplied by the W. & A. Fletcher Co., Hoboken, N. J. The ferry will be 147 ft. long, 50 ft. wide and 11 ft. deep. She will be of the side-wheel type.

J. Martinlich, quartermaster, Washington, is building the hull and the Puget Sound Dry Dock & Machine Co., Seattle, Wash., is building the engines for a new steamer for the quartermaster's route on Puget Sound. The steamer is to be 105 ft. long and 19 ft. beam and her engines are to be of the compound type with cylinders 11 and 25 in. diameters by 14 in. stroke. Steam will be supplied by a Taylor water-tube boiler.

It is reported by cable that the Hamburg-American Line has loaned one of its vessels to test the invention of Otto Shlick, the great German engineer, to prevent the rolling of vessels at sea. The invention consists of a massive balance wheel mounted in such a manner as to counteract the shifting of the center of gravity of the ship. The device has been tested only in connection with models, but it is announced that the Hamburg-American officials are convinced of its utility.

The Dominion government is continuing the examination of the cause of the explosion of the boilers of the government dredge J. Israel Tarte. The most interesting point brought out is the statement of Mr. James Howden, engineer of the government fleet at Sorel, that the water in Lake St. Peter carries a lot of small floating shapes which got into the boilers of the vessels operating there. This might have resulted in the water-gauge showing plenty of water while the boilers were in fact nearly empty.

An interesting meeting was held recently in the headquarters of the Electric Club in Wilkesbarre, Pa., by the Kearsarge section No. 35 of the Navy league of the United States. Mr. Walter McFarland, chairman of the United States navy, presided. Mr. James H. Delaney, secretary and treasurer of the section, exhibited some fifty stereopticon views of ancient and modern ships of war and their appurtenances through the kindness of the navy department. The object of the society is to popularize the navy among all classes.

Mrs. Roher, commonly known as Abigail Becker, the heroine of Long Point, died last week at her home in Wallingham Center. In the winter of 1854 she risked her life to save Capt. Rackett and crew of the three-masted schooner Conductor, which was wrecked on Long Point. For her bravery in rescuing the crew the government gave her a farm of 100 acres and a purse of \$1,000 was given her by the Buffalo ship owners. The New York Life Saving association decorated her with a gold medal and letters of recommendation were received from Queen Victoria and Lord Aberdeen.

Completing the longest tow on record the Standard Oil Co.'s steamer Atlas has arrived in San Francisco from New York with barge No. 39, both carrying oil. Seventy-two days were consumed by the Atlas in towing the barge from New York. The Shaw & Spiegle towing machine was used on both the Atlas and her barge by which all slack in the tow line was taken up automatically, thus preventing any strain upon the cable. The worst weather during the whole trip was in the Straits of Magellan, when for three days thick and foggy weather was experienced. Outside Cape Pillar in the Pacific more rough weather was run into but the Atlas and her tow met with no serious difficulty. Not a single vessel was sighted after leaving the straits and the Atlas and her tow were not even in communication with each other.

The four-masted schooner Governor Powers was launched

from the yard of Cobb, Butler & Co., Rockland, Me., last week and was named by Miss Grace B. Crowell, daughter of Capt. P. H. Crowell of the firm of Crowell & Thurlow, Boston. Fully 1,000 persons witnessed the launch, among them being Mr. H. N. Bean, the veteran ship builder of Camden, Me., who is said to have attended every launching within 300 miles of his home. It is seldom that a vessel is launched with sails and all the furnishings ready for use as was the Governor Powers. It had been intended to launch this vessel earlier but ice prevented so that the work was continued to make her complete. She will be commanded by Capt. A. L. Kent of Rockland, Me. The Governor Powers is the fourth vessel which Cobb, Butler & Co. have built for Crowell & Thurlow. The dimensions of the Governor Powers are as follows: Length, 273 ft. 3 in.; breadth, 44 ft.; depth, 20 ft. The schooner has a native frame of hardwood and hachmatack with white oak keel stem and stern. The planking inside and outside is of yellow pine. The engine, boiler and steam fittings were furnished by the Hyde Windlass Co. and the Bath Iron Works, Bath, Me. The following had charge of the various departments of her construction: Foreman of construction, David Wardwell; master joiner, E. J. Southard; master fastener, F. E. Cottrell; spar work, A. P. Wardwell; blacksmith work, L. A. Chase; rigging, R. Dunn of Thomaston; painting, Arthur Gray; caulking, E. P. Buchanan.

ORDER FOR ANOTHER LAKE STEAMER

The American Ship Building Co., has received its fifth order for ships for 1906 delivery. The last one was placed on Saturday last, by Hugh McMillan and others of Detroit, for the construction of a freighter to be a duplicate of the Ball Brothers recently launched at Lorain for Mr. Tomlinson, of Duluth. The new steamer will therefore be 500 ft. over all, 480 ft. keel, 52 ft. beam and 30 ft. deep, to be equipped with triple expansion engines with cylinders 22½, 36 and 60-in. diameters by 42-in. stroke, supplied with steam from two Scotch boilers 13 ft. 9 in. by 11 ft. 6 in. She will be of arch girder construction with straight hopper sides, and will have sixteen hatches spaced 24-ft. centers.

PERSONAL

Capt. J. M. Fields, who has for several years pursued the art of compass adjustment on the great lakes, has returned to Cleveland from San Francisco where he spent the winter and has established his headquarters as formerly at the Bethel hotel. He reports the sales of his compass corrector to be active and is reasonably busy in compass adjustment.

Capt. Charles A. Potter, formerly connected with the Lehigh Valley service on the great lakes, has been appointed inspector of hulls at Toledo vice Capt. Henry C. Judson who takes the place of the late Capt. George De Wolf of Cleveland. Last season Capt. Potter sailed the steamer Wyandotte from Buffalo to Crystal Beach.

Mr. W. J. Condlon, who formerly represented the marine department of the Standard Oil Co. at Buffalo, is now associated with the Frictionless Metal Co. of Richmond, Va., and will take charge of the Buffalo office of the company.

Lieut. Col. William H. Bixby has been made senior member of the board to report upon the improved modifications of the Colbert and Bee Tree shoals in Tennessee river. Col. Bixby was formerly government engineer at Detroit.

Mr. E. P. Boye, for the past five years connected with the Chicago branch of the house of Manning, Maxwell & Moore, has been appointed to represent the firm in Cleveland with headquarters in the Williamson building.

Mr. Frank A. Jones, president of the Marine Engineers' Beneficial association, is now making a tour of the great lakes visiting the various lodges.

ALLAN LINER PARISIAN RUN INTO

The Parisian of the Allan Line which was run into by the Hamburg-American steamer Albano in Halifax harbor on Saturday night last is a vessel for which the traveling public has acquired a great affection. While she is by no means a modern vessel, being surpassed in tonnage and speed by a great many, still in comfort and seaworthiness she is surpassed by none. The Parisian has the reputation of rolling less than any similar vessel in the North Atlantic service. She was stopped in Halifax harbor to take aboard a pilot and while engaged in that operation was struck in the stern by the incoming liner Albano. Capt. Johnston of the Parisian saw that a collision was imminent and ordered the Parisian full speed ahead but could not get headway in sufficient time to avert it. The hole was a big one and the Parisian began taking in water in torrents. Capt. Johnston drove her, however, at full speed for the dock and at the same time signaled for the tugs in the harbor to get alongside. With the vessel's pumps going and with lines from the tugs also pumping, she was kept afloat until the dock was reached when she touched bottom. Admirable discipline was observed by the crew and though the Parisian had over 1,000 passengers aboard every-one was saved.

OBITUARY

Duncan Symington, for many years superintendent of the Frontier Iron Works and the Northern Engineering Works at Detroit and at one time in the employ of the Fulton Iron & Engine Co. of that city, died at his home in Detroit on March 21. During his connection with the Frontier Iron Works Mr. Symington was active in the construction of engines for vessels of the great lakes. Beginning with the Charles Hebard and Chenango engines were built for the following vessels: W. R. Stafford, Sitka, Gogebic, Hadley, R. L. Fryer, Fedora, George F. Williams, John Mitchell, Majestic, Livingstone, T. W. Palmer, Nyanza, John Harper, Panther, Mackinac, Keewanaw, W. H. Gilbert, Pere Marquette No. 5, Tampa, Uganda, Samuel Mather, Pathfinder, City of Everett, Merida, Pentland, Shenandoa, Madagascar, Nicaragua, Venezuela, Rappahannock, Sacramento, Appamatox, Shenango No. 1 and a number of miscellaneous craft of various descriptions.

COAL BIDS FOR MANILA REJECTED

After advertising for and receiving bids for transporting 40,444 tons of coal from Norfolk, Baltimore or Philadelphia to Manila, the navy department has announced that none will be accepted for the reason that the annual appropriation for coal transportation is practically exhausted. While it was stated that no bids for foreign tonnage would be considered, the foreign vessel owners submitted bids anyhow. Shipping men are at a loss to understand why the navy department should ask for bids when they must have known the amount of money available. The bids submitted were as follows:

McCall & Co., 40,000 tons in British steamers at \$4.35; Sanderson & Son, 11,600 tons, steamers Inch Borba and Inch Aran, \$4.40; Funch, Edye & Co., 41,750 tons, in British steamers, \$4.50 or, at charterers' option American sailing vessels, \$6.50; T. Hogan & Son, 11,200 tons, British steamers, 6,100 tons at \$4.35 and 5,100 tons at \$4.50; Bowring & Co., 5,000 tons at \$4.50 in British steamer, and (for A. Wier & Co.) 20,000 tons at \$4.50 in British steamers; F. P. Nichols, 4,400 tons, American sailing vessel, \$6.50; P. Ruprecht, 5,000 tons, ship Acme, \$6.50; Arthur Sewall, 9,100 tons, \$6.50, May-June loading.

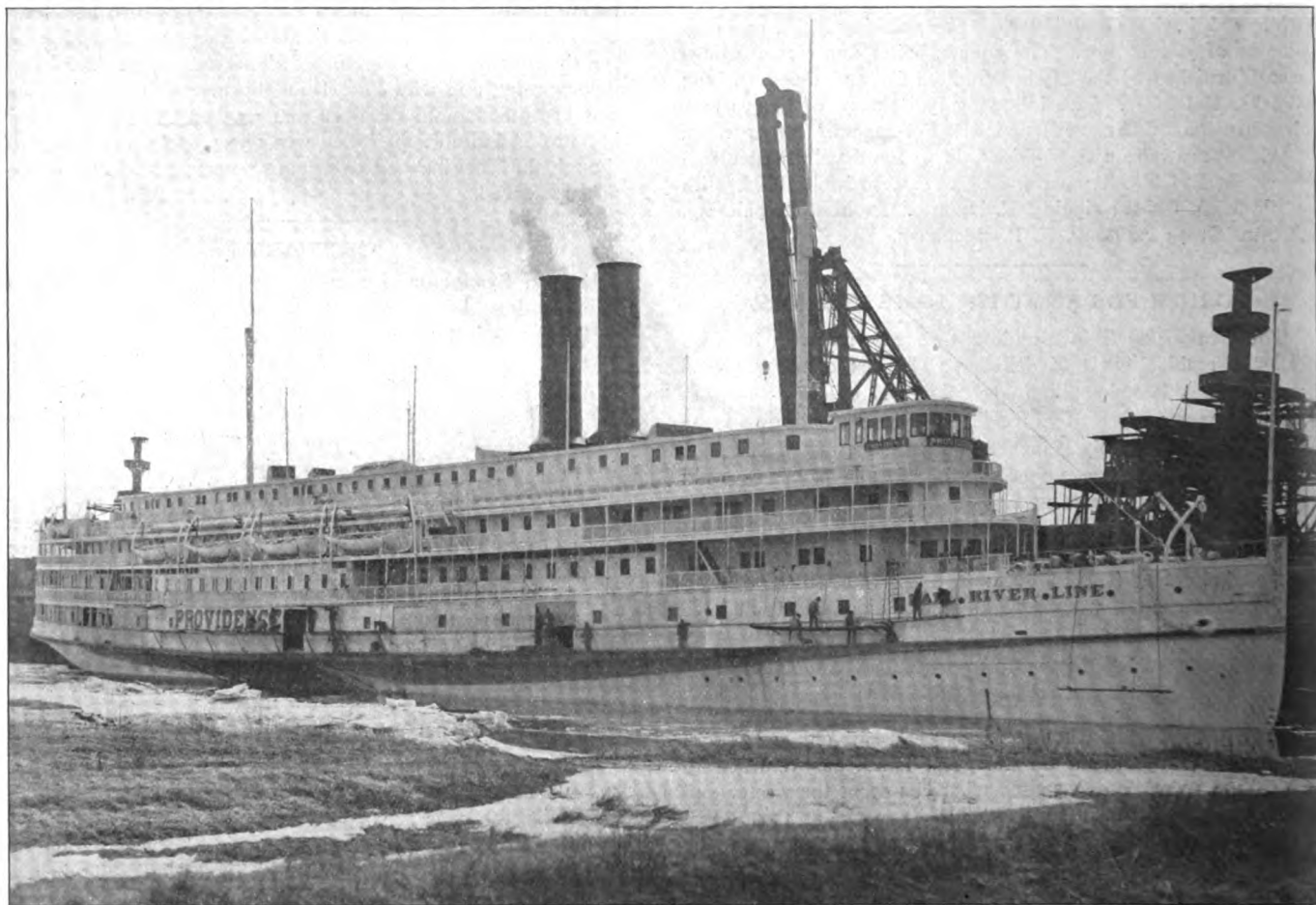
The Dominion government has passed the necessary order abolishing the tax levied on United States steamers trading into Canadian ports. An order abolishing the like tax on Canadian vessels trading into United States waters, will be issued by the department of commerce and labor, Washington.

Sidewheel Passenger Steamer Providence

The Sound steamer Providence, built for the Old Colony Steamboat Co., now operated by the new corporation called the New England Navigation Co., was built by the Fore River Ship Building Co. of Quincy, Mass., from designs prepared by the late George Peirce, formerly superintendent of Marine construction for the Old Colony Steamboat Co. Since the death of Mr. Peirce, which occurred soon after the contract was made, the boat has been built under the supervision of Mr. Stevenson Taylor, consulting engineer, marine district of the New York, New Haven & Hartford

in appearance is of the familiar Sound type, having a straight stem and semi-elliptical stern, with sponsoned wingwalls from side wheels tapering gradually forward and aft, adding considerably to the strength and ensuring a great range of stability. Three tiers of deck houses are erected over the main deck and with two large smokestacks and the usual bunting poles, a particularly pleasing profile is composed.

The following are the principal dimensions of the steamer: Length over all, 397 ft.; length on 12-ft. water line, 378 ft. 6 in.; breadth, molded at widest part, 50 ft.; breadth over



SIDEWHEEL PASSENGER STEAMER PROVIDENCE OF THE OLD COLONY STEAMBOAT CO.'S FLEET.

[Built by the Fore River Ship Building Co., Quincy, Mass.]

Railroad Co., and Mr. J. Howland Gardner, who succeeded Mr. Peirce as superintendent of marine construction, and Mr. William S. Rodgers, assistant to Mr. Gardner. The vessel has passed all requirements of the United States steamboat inspection and the Association of Fire Underwriters.

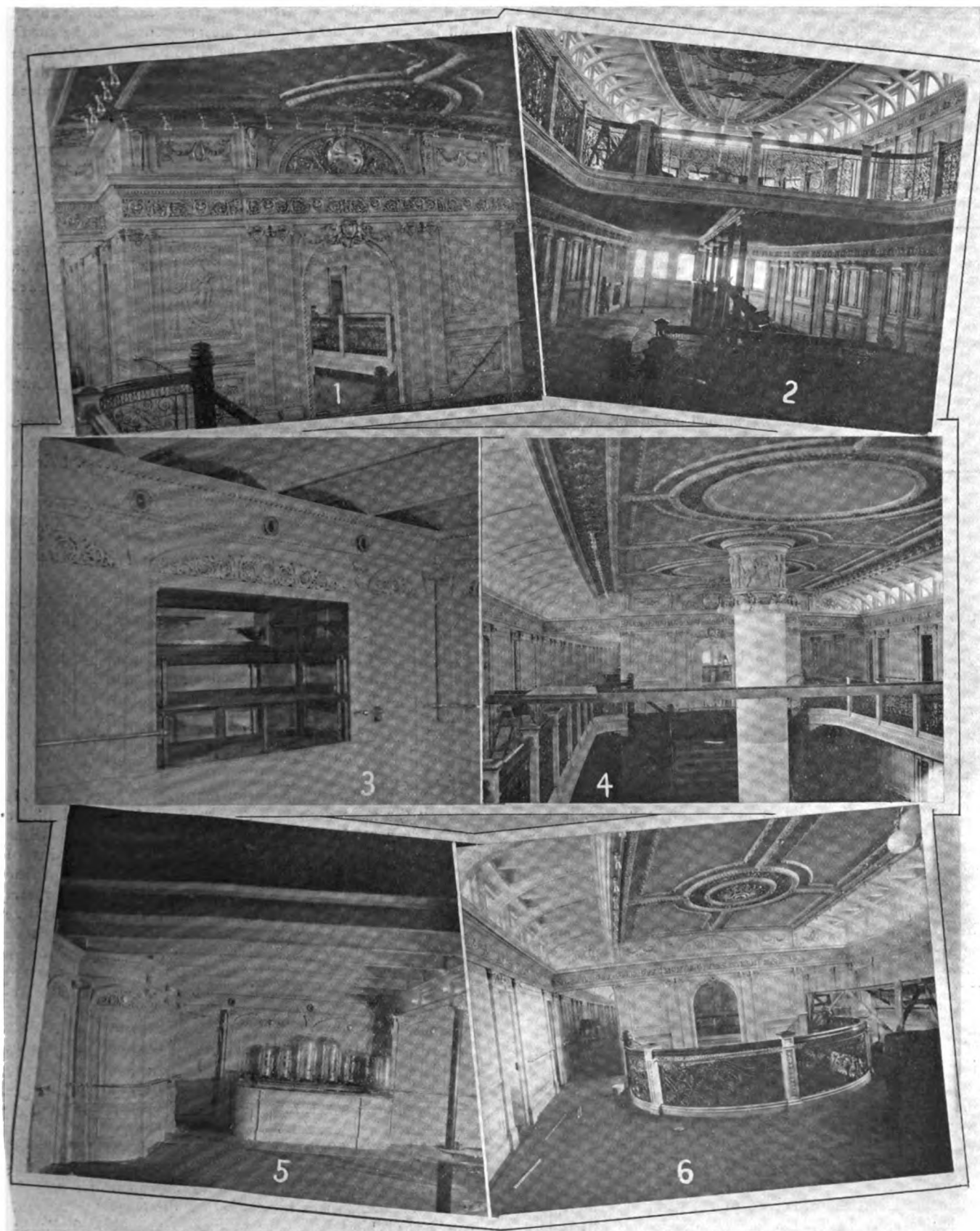
The Providence, which will soon take her place on the Fall River Line, running from Providence to New York, is about a mean in size and dimensions of the other large boats of the line, being very nearly the tonnage and dimensions of the Puritan, somewhat smaller than the Priscilla and somewhat larger than the Plymouth and Pilgrim. She is now in New York having her bottom cleaned and painted.

In her design the designer has adhered to those well-known features which have made the line so deservedly successful and popular. The hull is constructed of mild steel on the double hull system for the greater part of her length, and

guards, 88 ft.; depth, molded at center, 21 ft. 10 in.; dome deck to keel, 62 ft.; gross tonnage, 4,365.

The longitudinal system with double hull on which the Providence ensures a structure of enormous strength over the usual transverse construction, the double hull being subdivided into about thirty-eight separate watertight compartments which protect the vessel against the risk of damage in grounding, or localize it to a very restricted area. In addition the hull proper is itself divided by transverse steel bulkheads into eight watertight compartments, these bulkheads being of ample strength to withstand any pressure that may be exerted on them due to any of the large compartments being flooded by collision, ensuring the absolute safety of the vessel in the event of accident.

The vessel has seven decks, comprising lower, main, saloon, gallery, hurricane, break and dome decks. The construction of the hull below and including the main deck is



1. BULKHEAD OF GRAND STAIRCASE. 2. GRAND SALOON LOOKING AFT. 3. ONE OF THE EIGHT SIDEBOARDS IN MAIN DINING ROOM. 4. GRAND SALOON FROM GALLEY DECK. 5. COFFEE URNS IN MAIN DINING ROOM. 6. GALLEY DECK FORWARD

entirely composed of steel and above this of woodwork connected to steel beams and girders extending the entire length. This method of composite construction ensures an exceptionally light structure, while at the same time the maximum of rigidity is obtained.

The general style of interior architecture and decoration is French renaissance, strongly influenced by Louis XVI period, that being the most graceful and decorative of the French orders and lending itself particularly well to the flowing lines of marine architecture. The color throughout the major portion is in rich old ivory, heavily accentuated with gold in the prominent features of the relief decorations. The elaborate electric lighting fixtures are of burnished gold finish, handsomely executed, and so distributed among the decorations that while the lighting is brilliant, the effect is a soft diffusion through every portion.

The quarter deck has a rich, heavily carved frieze, the space beneath to line of dado is panelled with classical figure decoration in bas-relief, beautifully modeled and representing music and the dance, full of movement and graceful lines. The floor is of interlocking rubber tiles in handsome designs. The stairway leading front here to saloon and gallery decks is in dark polished mahogany with artistically carved newels.

The saloon and grand stairway are a fine example of the decorator's art, combining richness of detail and purity of style, treated effectively in soft ivory, heavily enriched with gold, giving full value to the smallest detail of ornament, and accentuated with a soft greenish blue sky effect in three circular panels of the dome ceiling. The deck is carpeted in red and the upholstery is of plush of the same color. The effect is rich but refined, carefully planned and executed. The designing of the decorations was in charge of Messrs. Mortensen and Holdensen of Boston, and the modeling of the ornamentation is by Mr. Charles Emmel of Boston.

Beginning with the dome deck the accommodations are as follows: The staterooms on this deck are arranged in two rows, one on each side of the center line of the vessel, with a fore and aft passageway between. At the after end is situated the president's private stateroom, or director's room, forward of this there are twenty-eight staterooms. The amidship portion of this deck is given up to the engineer's staff, nine staterooms being provided for this purpose. Quarters for sailors, watchmen and band are provided at the forward end. A large pilot house is situated at the extreme forward end.

Gallery deck. This deck is fitted up with two rows of staterooms on each side of the vessel for nearly its entire length, there being 151 staterooms and four parlor rooms, with staterooms for captain, first and second mates, first and second pilots, quarter master and bow watch. Ample toilet accommodation has been provided for both men and women.

Saloon deck. The saloon deck is arranged somewhat similarly to the gallery deck just described, 159 staterooms being fitted, six parlor staterooms, each fitted with a large bed and one additional with bathroom attached. These handsome staterooms are daintily decorated with ornaments in low relief and finished in cream and gold in pure Louis XVI style. At the after end of the saloon deck the music room has been built with all of its fittings and furnishings in harmony with the surroundings.

Main deck. At the after end of the main deck the quarters for women have been placed, comprising staterooms with thirty-five berths. The position of these quarters ensures complete privacy, special toilet arrangements have been installed in convenient positions.

Forward of this is the social hall, quarter deck, purser's office, barber shop, bar, coat room and men's toilet, with the cargo space, measuring about 8500 cu. ft., placed amidships.

Accommodations for steerage passengers are located forward. The men's and women's quarters are both fitted up with the most modern sanitary arrangements. In the men's quarters there are forty-five berths and in the women's sixty-nine pipe berths. At the extreme forward the firemen's quarters are situated, eighteen metal berths being provided in an ample and roomy fore-castle.

The main dining room is on the lower deck aft and is accessible either by way of the quarter deck or by a staircase leading down to the social hall from the saloon deck. The dining room is very attractive ornamentally and decorated in cream and gold. An innovation in steamboat practice has been introduced here by having on each table electric candelabra of four lights each, shaded with silk shades, giving a mellow and exquisite effect. The private dining room in the forward part of the main room is handsomely panelled in teak and lighted by electric lights concealed in the cornice.

There is an additional dining room for the ship's complement and forward passengers on the lower deck forward. Around the sides of this room are fifteen large staterooms, fitted with berths in the usual manner.

Amidships, on starboard, abreast engine room, are fitted five staterooms for cooks, porter's shop, engineer's stores, etc. Port side is arranged with pantries, kitchen and butcher shop.

The crew's fore-castle is at the extreme forward end and contains thirty pipe berths in a large and well ventilated space.

Quarters for stewards and servants are arranged below the lower deck.

Particular care and attention has been given to thorough ventilation and the most approved systems and appliances adopted and so regulated that the air can be changed in all staterooms, dining rooms, pantries and kitchens, not naturally ventilated, to provide at all times an abundance of fresh air. For this purpose large blowers have been installed.

Appliances for fire protection are most complete, thorough and very much in advance of any statutory requirements.

For this purpose two powerful pumps are installed amidships on the main deck in a fire-proof enclosure and under the direct control of the engine room staff. From these pumps are led four separate and independent fire mains of copper tubing 6 in. in diameter reduced to 2½ in. at the ends of the vessel. Running the entire length of the vessel these mains have at suitable intervals a total of forty-five plugs to which are attached sufficient lengths of fire hose of the finest quality made, also three large capacity 6 in. deck hand pumps with direct connection to the sea, the sea valves being immediately controlled from the deck. Arrangements are also provided at ship's side for shore connections.

In addition to this complete water service the vessel is well equipped in all parts with all minor appliances, such as axes, chemical extinguishers and water buckets. The efficiency of the water force is insured by complete electric watchman clock service.

An automatic fire alarm thermostat is located in each stateroom and at short distances in other parts of the vessel. When a thermostat is set off by any abnormal rise in temperature it indicates its location on the telephone central switchboard and at the same time rings fire alarm bells in the pilot house, engine rooms and crew's quarters.

A very complete telephone system is installed. Each stateroom and all the important stations of the vessels are provided with telephones connected to a central switchboard. There are also private lines direct from the pilot house to the engine room, steering gear, wireless telegraph station and

main deck, and from engine room to chief engineer's room. American bell apparatus is used with the common battery system. There is also installed an elaborate system of voice tubes, electric call bells and mechanical signal gongs.

The electric generating plant of three 50 K. W. general electric direct-connected marine-generating sets, with vertical tandem compound engines, located in the engine room at the line of the main deck. They operate at 110 volts direct current and 350 R. F. M. The plant is located in the engine room enclosure on the main deck.

The distribution is on the two-wire system, feeders from the generator switchboard supplying numerous panel boards in cabinets located in parts of the vessel. Each panel board supplies the lights in its immediate vicinity on comparatively short distribution circuits. Steam-tight fixtures with wiring in steel enameled conduits are used in all machinery spaces, freight spaces and hold. Living spaces are wired in molding and have ornate fixtures of special design to harmonize with the surrounding decorations. A total of about 1,600 incandescents are used.

The usual auxiliary machinery for steering the ship and handling her conveniently has been supplied, comprising steam and hand gear, one powerful steam windlass on main deck forward provided with vertical gypsy heads and steam capstans for warping, etc., worked by independent engines of the latest design; also two independent capstans aft on main deck for warping purposes. The anchor gear includes two 5,200-lb. anchors and 180 fathoms of 17½-in. chain cable with cranes and rolling boards complete.

The most modern appliances for cleanliness and sanitation are employed throughout the vessel and especial means to accomplish these results are provided by the installation of the Kenny Vacuum sweeping system, by which all carpets and staterooms can be daily thoroughly cleaned without accumulation of dust. Six branches are provided for attachment of hose and sweepers on each passenger deck. By this apparatus the dust and dirt which daily accumulates is actually removed from the steamer, not stirred up as by ordinary sweeping, only to be again deposited.

The life saving appliances consist of twelve metal life boats each 26 ft. by 7 ft. by 2 ft. 6 in., ten 20 ft. by 22 in. diameter life rafts, one Lyle line throwing gun to make a shore connection and 1,400 cork life jackets, each of ample buoyancy (tested) to support indefinitely one person, so that it will readily be seen everything that foresight could suggest has been done to provide for the safety of all on board.

The Providence is propelled by iron feathering paddle wheels which are 29 ft. 6 in. outside diameter and each containing twelve buckets 13 ft. long and 4 ft. wide. The paddle wheels are actuated by double inclined compound engines, two high-pressure cylinders 44 in. in diameter and two low-pressure cylinders 83 in. diameter and 9 ft. stroke. The framework of the engines is built up of heavy steel plates and shapes secured to the specially strengthened inner bottom and framing of the vessel. The Stevens valve gear is used, with Stephenson link and Sickel's cut off on the high-pressure cylinders.

There are two condensers located in the after part of the engine room, one on each side of the vessel. The condenser shells are of cast iron, each containing a cooling surface of 5,000 sq. ft.

The circulating water is supplied to each condenser by two 10-in. centrifugal pumps, driven by an independent vertical engine. The two main air pumps, each 50 in. diameter by 30 in. stroke are connected to the low-pressure cross-heads by means of links and rocker shafts. Each pump has a 16-in. suction from the condenser and discharges into a feed water heater through a hotwell and filter tank or directly overboard from the hotwell.

The boiler room, which is immediately forward of engine room, is equipped with six Scotch boilers, arranged back to back in center of vessel, with fire rooms outboard extending fore and aft, arranged for closed ash pit forced draft system.

The boilers are 14 ft. 9 in. in diameter by 12 ft. 9½ in. long, and built for a working pressure of 152 lbs. per square inch. Each contains three 49-in. inside diameter corrugated furnaces, 308 tubes, 3 in. outside diameter, No. 10 B. W. C. and has 88.8 sq. ft. of grate surface and 2,542 sq. ft. of heating surface.

There are two smokestacks arranged fore and aft, each 7 ft. 7 in. inside diameter and 8 ft. 9½ in. outside of casing. The height from grates to top of stack is 90 ft. 3 in. At the base of each stack is a superheater 11 ft. diameter by 12 ft. high.

The fire rooms are also equipped with four ash ejectors, two on each side of the vessel.

The coal bunkers run fore and aft and extend the full length of the fire room, with a total capacity of 200 tons.

Located on the main deck just abaft the superheaters, is an 83-in. diameter vertical boiler, built for a working pressure of 162 lbs. per sq. in. with 30 sq. ft. of grate surface and 862 sq. ft. of heating surface.

There are two 12 in. by 7 in. by 12 in. Blake horizontal duplex outside packed plunger feed pumps located in the engine room, one on either side of the center between engine frames. Each pump takes suction from the condenser, from the feed water heater and from the forward and after feed tanks and discharges into the feed mains.

There are two other pumps located in the engine room, one a 12 in. by 9 in. by 7 in. Cameron bilge pump, having a 5-in. suction from the secondary drain, and the other an 8 in. by 5 in. by 12 in. Blake horizontal duplex piston pump for fresh water service.

There is also located in the donkey boiler room a 5½ by 3¼ by 7 in. Blake horizontal single piston pump for feeding the donkey boiler. In addition to the feed pumps, both main and auxiliary boilers are equipped with injectors.

On the main deck, port side, just forward of the paddle box, is the pump room, in which are located two Blake horizontal duplex piston fire and wrecking pumps. One 18½ in. by 12 in. by 12 in., the other 14 in. by 8½ in. by 12 in. with 10 in. suctions from main drain and sea respectively.

There are two forced draft blowers located in the lower engine room, and two just forward of boiler room bulkhead, each with an 84-in. diameter fan and run by a 7-in. by 10½ in. vertical engine. The blowers are arranged to ventilate the engine compartment and forward cabin, by taking the air from each place and discharging into air ducts of forced draft system. Blower chutes are also arranged so that the blowers can discharge into the fire room for ventilating purposes.

There is a 12-in. main drain of copper running through the vessel from the forward to the after hold with five 12-in. suctions, one from forward hold, two from fire room, one from engine room and one from after hold. There is also a secondary drain running throughout the vessel, with sixty-five connections for draining bilges and inner bottoms and arranged with a 5-in. suction to the Cameron bilge pump and a 6-in. to the fire and wrecking pumps. In addition to the above there are two 10-in. suctions on the main circulating pumps for pumping bilges in the engine room.

F. A. F. McDonald and other members of the Neafie & Levy Ship & Engine Building Co. have bought the site of the Globe Iron Works from the Standard Oil Co. and are about to begin the dredging. A large sectional dry dock purchased in New York will be installed when the proper depth has been dredged.

A BRIEF HISTORY OF THE CRANE COMPANY

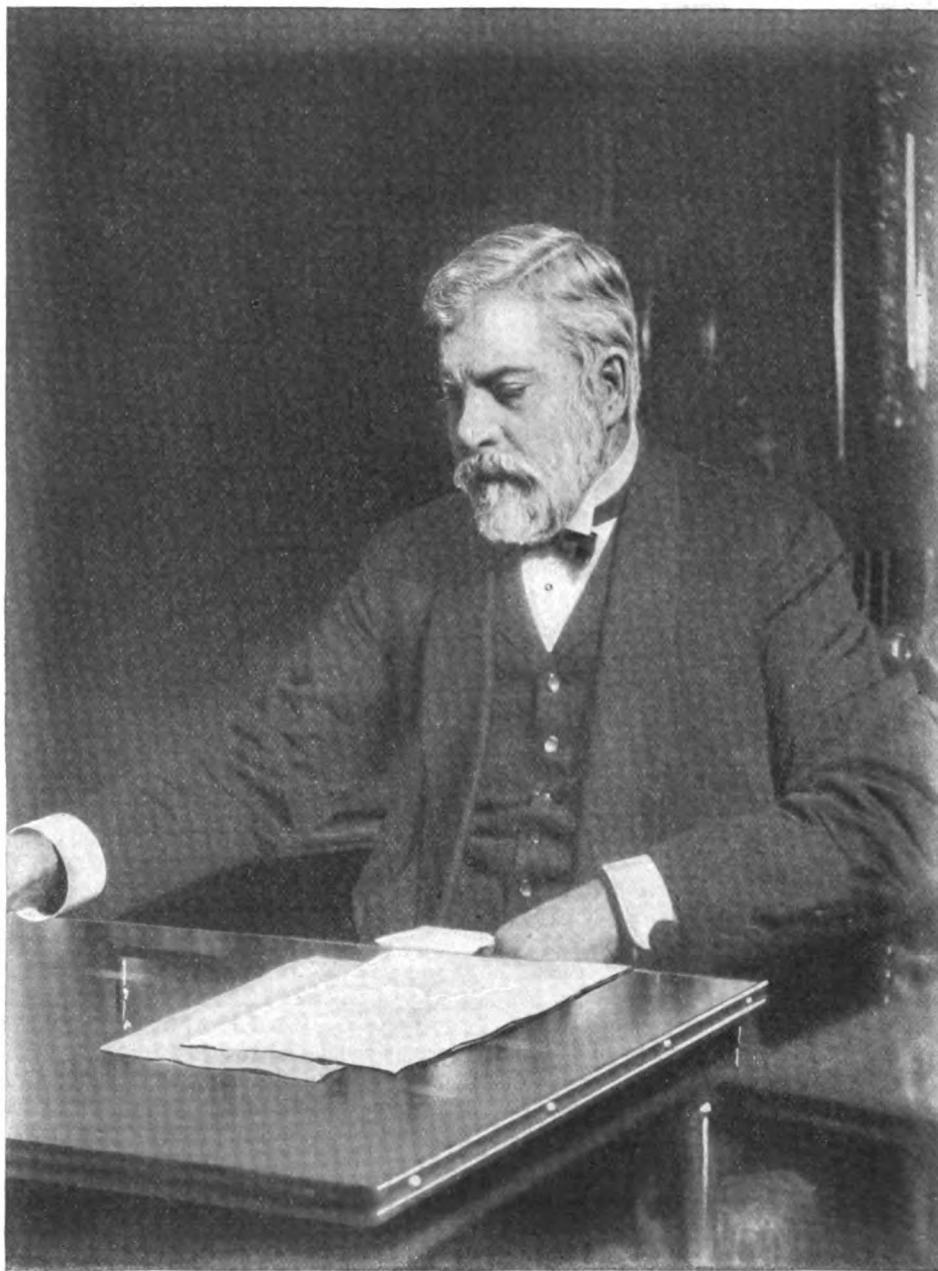
The corporation now known as the Crane Co., Chicago, had its origin in 1855, when Richard T. Crane opened a brass foundry in the corner of the lumber yard belonging to his uncle, Martin Ryerson. Shortly after this a brother, Chas. S. Crane, joined him, and the business developed rapidly and securely, necessitating constant additions and improvements in order to keep abreast of the demands of the trade. Nearly fifty years have passed since the furnace in the little building called a foundry was first fired and in that time the business has developed into a corporation that employs in the neighborhood of 5,000 workmen and is represented by branch houses scattered from coast to coast.

Since its establishment in 1855, when it was known as R. T. Crane & Brother, the company has existed under various titles. The first alteration was made in 1865, when the business was incorporated and the name changed to the Northwestern Manufacturing Co. At this time the company built the first pipe mill west of Pittsburgh, and the first malleable iron fittings foundry outside of the Eastern states was started together with the office at N. Jefferson street, which has been the headquarters of the company for the past forty years. In 1872 it became known as the Crane Bros. Manufacturing Co., which continued until 1890, when the Crane Co. was incorporated. This house, which is the pioneer of its kind in the Northwest, are manufacturers of wrought iron pipe, malleable and cast iron fittings for water, steam and gas, brass and iron valves and cocks, brass and iron gate valves, steam and gasfitters' tools, engineers' and en-

gine builders' supplies, safety valves for stationary, marine, locomotive and portable boilers, water-relief valves, cylinder relief and shifting valves, hydraulic relief valves, complete piping equipments for power plants, this full assortment reaching a figure in excess of ten thousand articles. These facts will indicate the enormous growth in varieties and sizes of their

products as well as the complications that the business of the Crane Company has undergone within a comparatively few years.

It has been the aim of this company to supply every want that the trade, in its progress, has demanded, and this has led to their becoming the owners or controllers of many patented articles of unusual ingenuity and value, by means of which they have been able to go much further than other concerns in meeting such demands as have arisen. The Crane Company has succeeded in producing a complete as-



MR. R. T. CRANE.
Founder and President, 1855-1895.

sortment of goods of uniform excellence by the use of the perfect and extensive facilities for manufacturing on a large scale under the direction of able and practical men who are thoroughly familiar with the requirements of the trade. A rigid inspection of materials and tools in all stages of production, and a constant attention to details has made the name of Crane company a guarantee more valuable than any testimonial that can be written.

The Rutland Transit Co. has decided to enter into an agreement proposed by the International Longshoremen's association to handle freight exclusively with union men this season at Ogdensburg.



VOL. XXXI.

CLEVELAND, O., MARCH 30, 1905.

No. 13.

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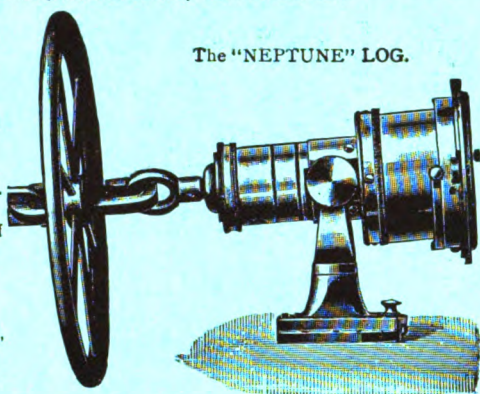
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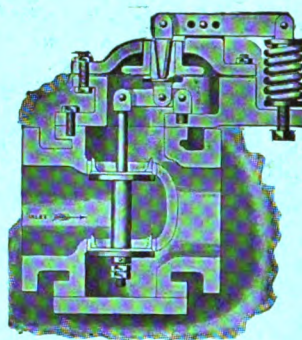


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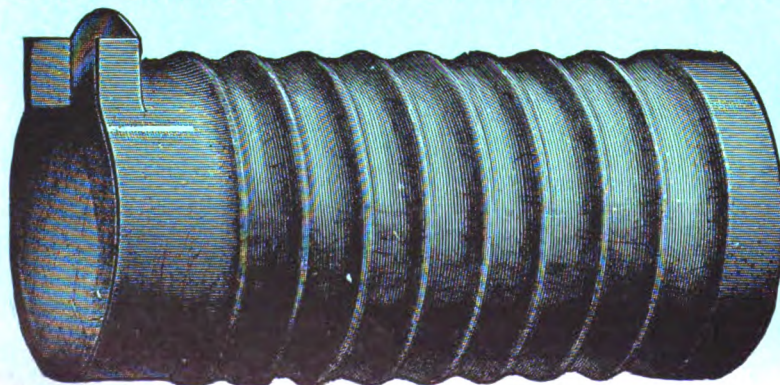
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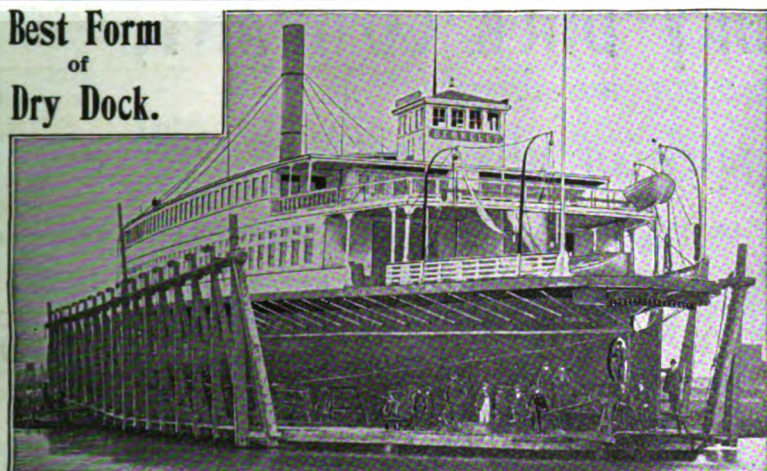


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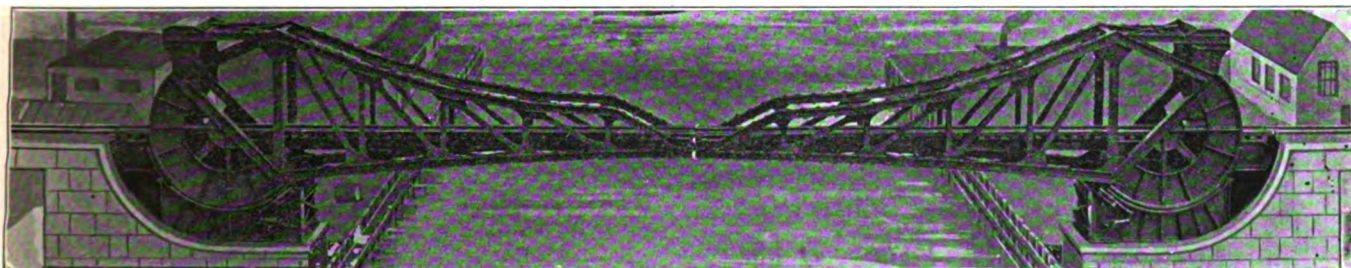
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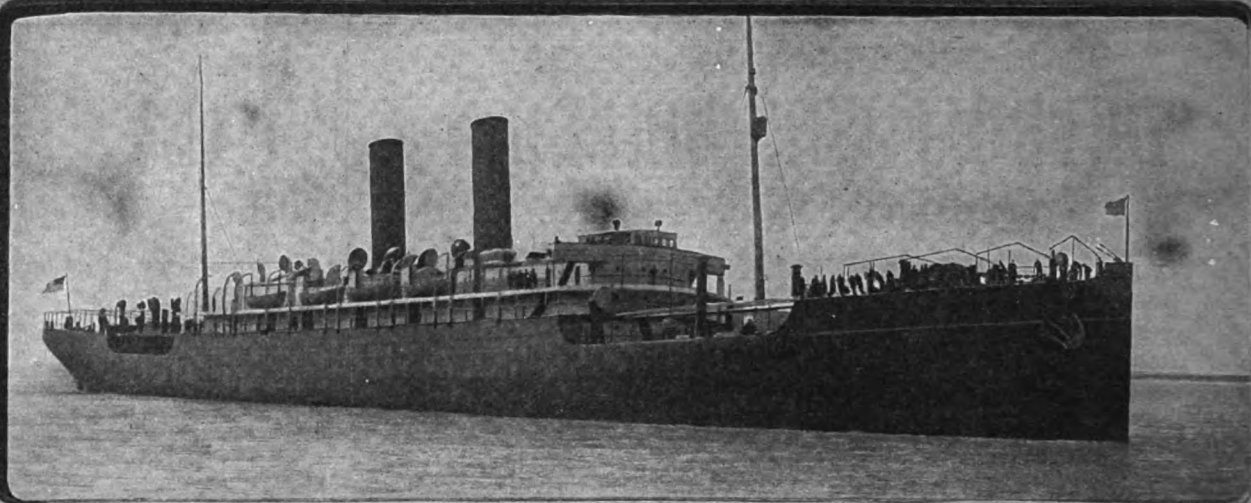
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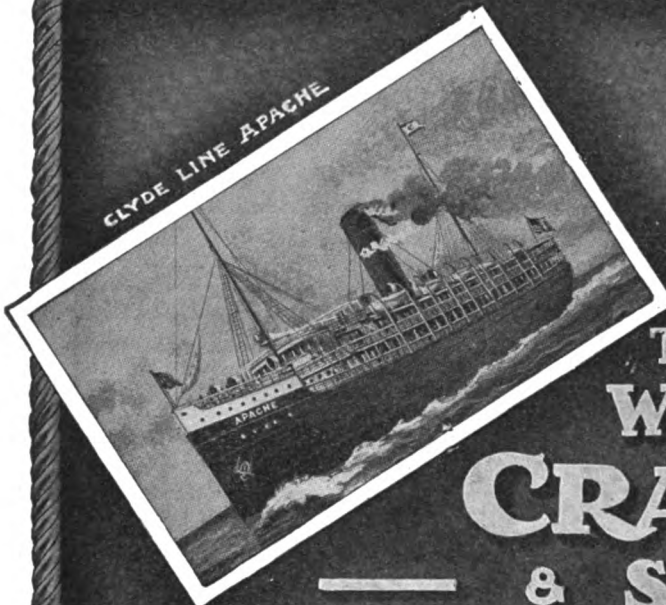
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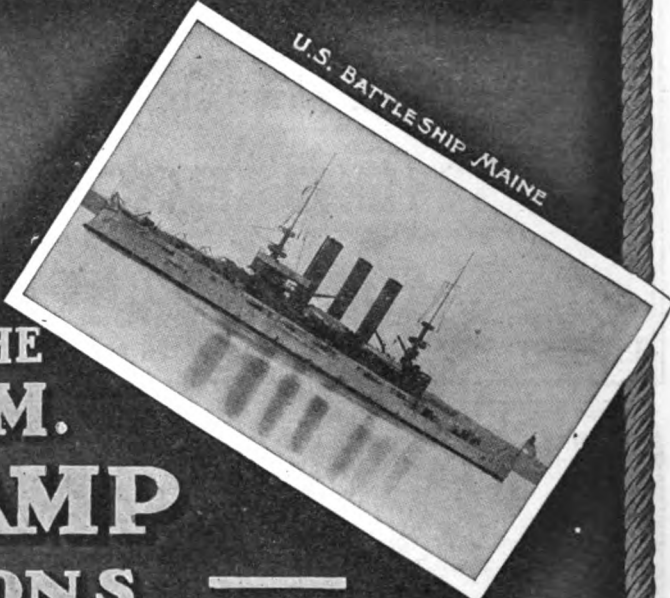
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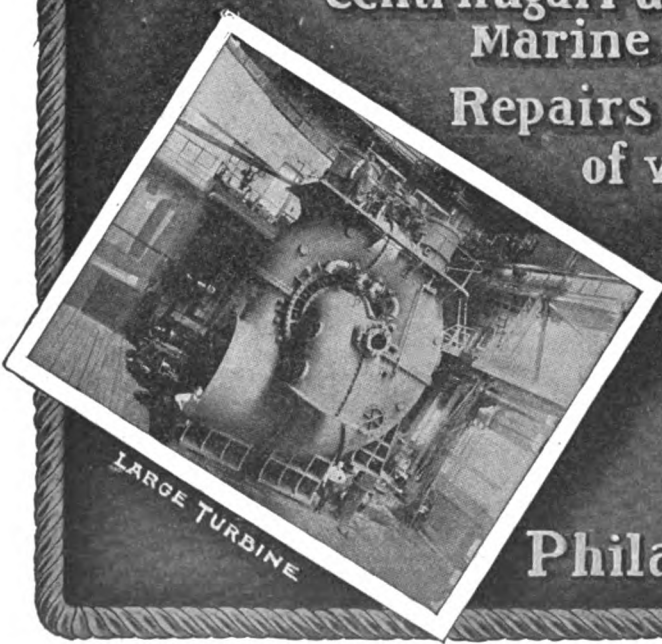
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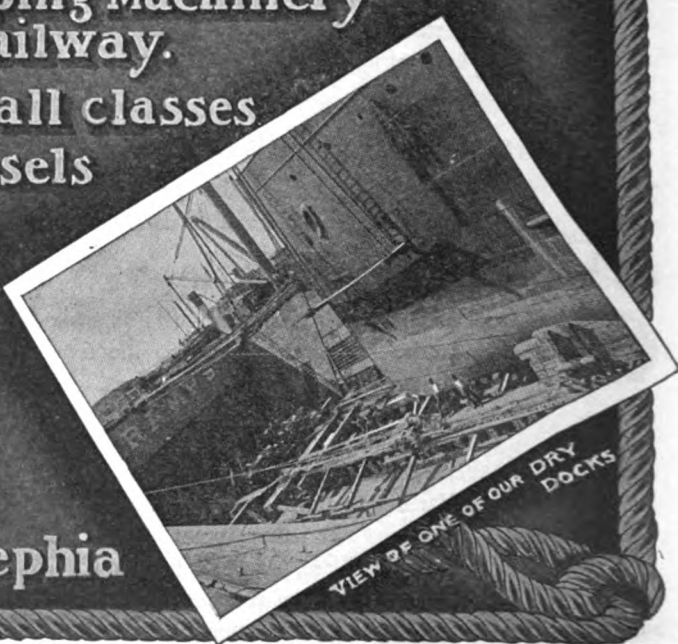
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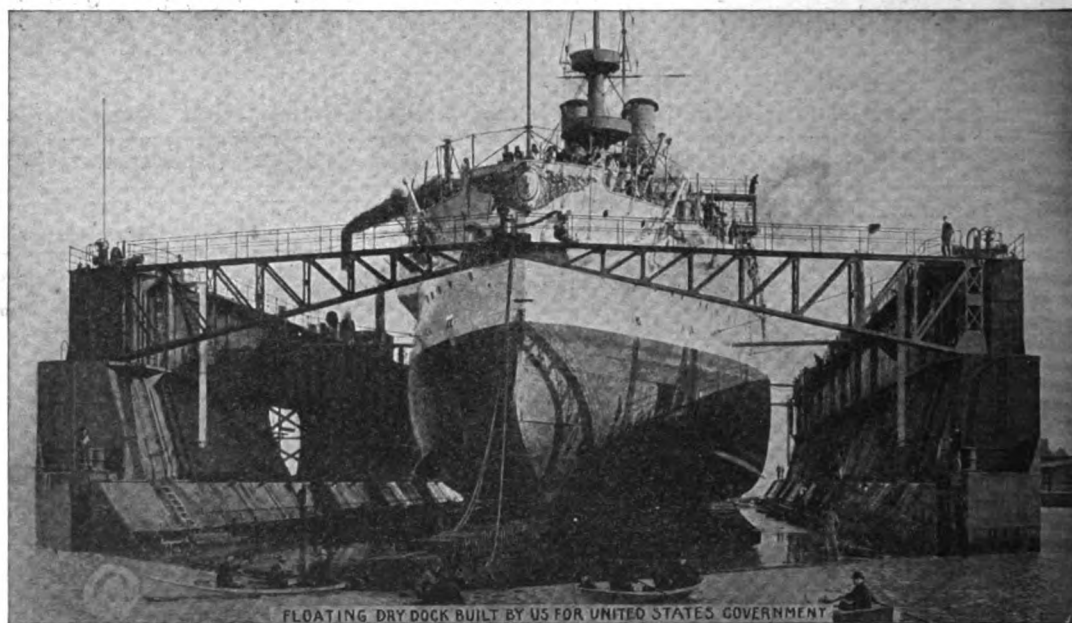
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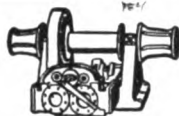
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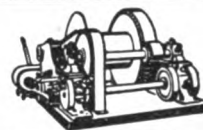
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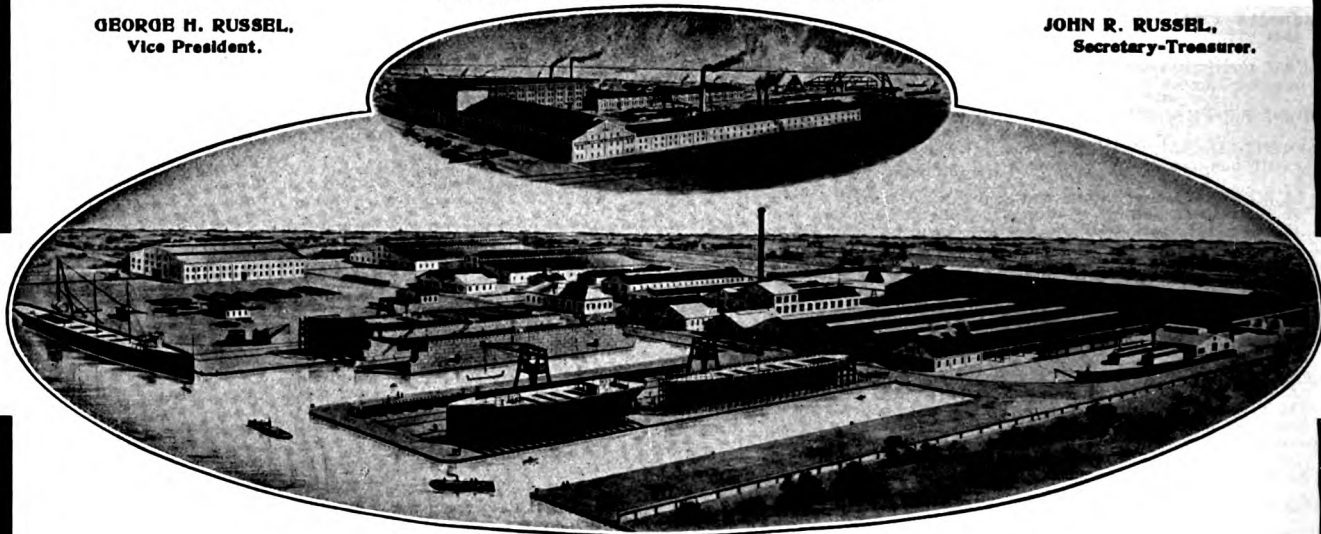
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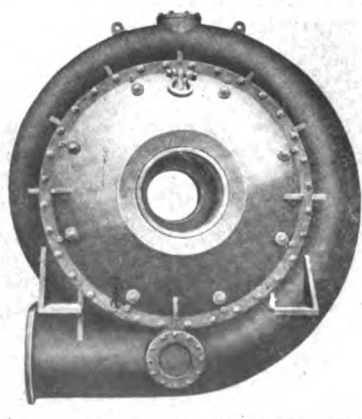
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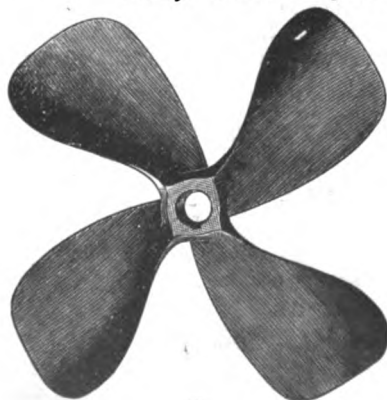
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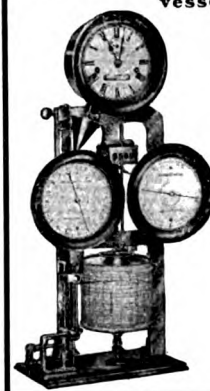
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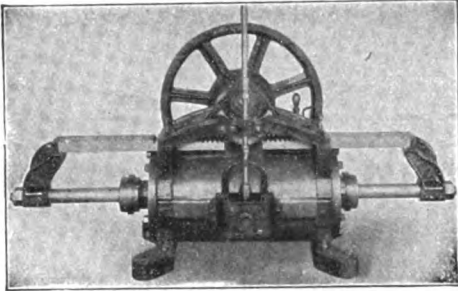
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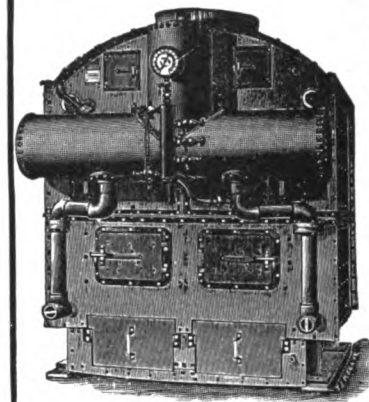
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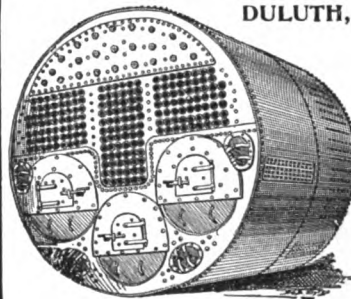
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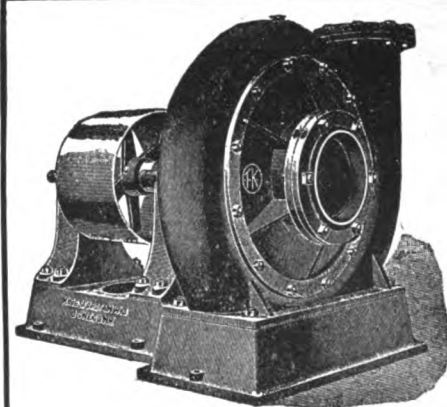
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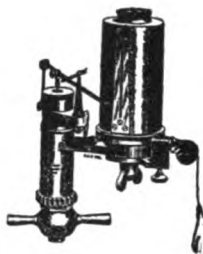
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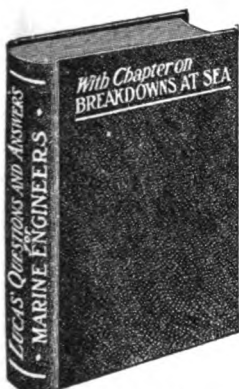
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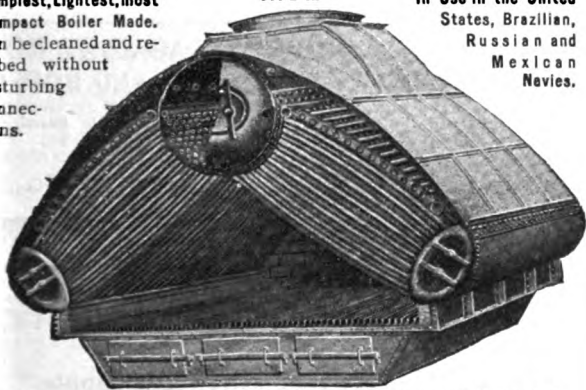
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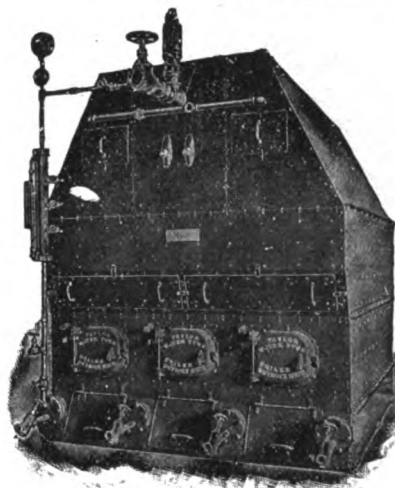
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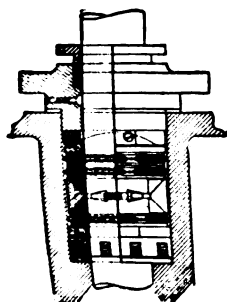
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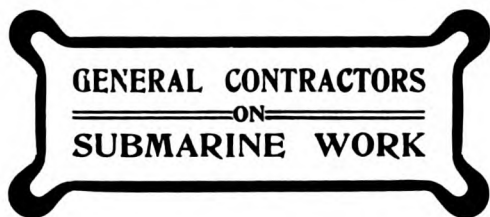
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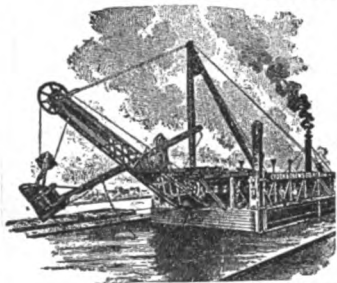
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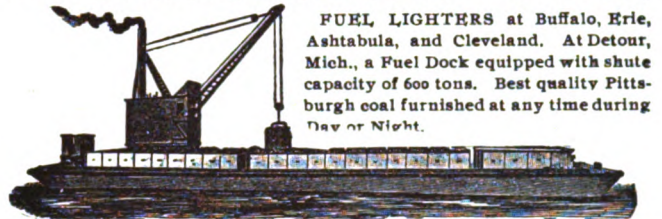
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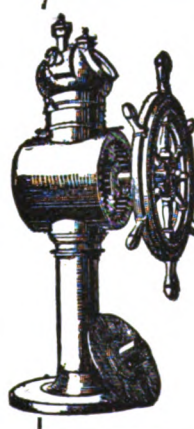
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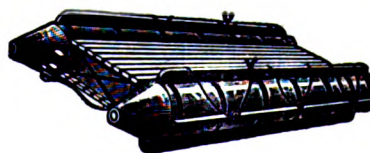
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Buyers' Directory of the Marine Trade

For a more complete classification than that represented by advertisers in the Marine Review, see the BLUE BOOK OF AMERICAN SHIPPING, marine and naval directory of the United States, published by The Marine Review, Cleveland.

See accompanying index of Advertisers for full addresses of concerns in this directory.

AIR COMPRESSORS, AIR HOISTS, ETC.

Great Lakes Engineering Works.....Detroit.
Mietz, Aug.New York.

AIR PORTS, DEAD LIGHTS, ETC.

Marine Mfg. & Supply Co.....New York.

AIR PUMPS AND APPLIANCES.

Fore River Ship & Engine Co.....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.

ANCHORS.

Bowers, L. M. & Co.....Binghamton, N. Y.
Seaboard Steel Casting Co.....Chester, Pa.

ANTI-FOULING AND ANTI-CORROSIVE COMPOSITION FOR STEEL VESSELS.

Holzappel's American Composition Co.....New York.

ANTI-FRICTION METALS.

Cramp, Wm. & Sons.....Philadelphia.

ARTIFICIAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Sturtevant, B. F., Co.....Hyde Park, Mass.

ASH EJECTORS.

Great Lakes Engineering Works.....Detroit.

ATTORNEYS AND PROCTORS IN ADMIRALTY.

Gilchrist, Albert J.....Cleveland.
Goulder, Holding & Masten.....Cleveland.
Hoyt, Dustin & Kelley.....Cleveland.
Kremer, C. E.....Chicago.
MacDonald, Ray G.....Chicago.
Potter & Potter.....Buffalo.
Shaw, Warren, Cady & Oakes.....Detroit.
White, Johnson, McCaslin & Cannon Cleveland.

BAROMETERS, MARINE GLASSES, ETC.

Ritchie, E. S. & Sons.....Brookline, Mass.

BELTING, RUBBER.

New York Belting & Packing Co.....New York.

BLOCKS, SHEAVES, ETC.

Boston & Lockport Block Co.....Boston, Mass.
Cleveland Block Co.....Cleveland.

BLOWERS.

Power Specialty Co.....Detroit.
Sturtevant, B. F. Co.....Hyde Park, Mass.

BOAT BUILDERS.

Drem, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, David.....New York.
Lane & DeGroot.....Long Island City, N. Y.
Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P. & Co. Winthrop Harbor, Ill.

BOILER CLEANING DEVICE.

Power Specialty Co.....Detroit.

BOILER COMPOUNDS.

Dearborn Drug & Chemical Works.....Chicago.

BOILER MANUFACTURERS.

Almy Water Tube Boiler Co.....Providence, R. I.
American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Babcock & Wilcox Co.....New York.
Bertram Engine Works Co., Ltd.
.....Toronto, Can.
Chicago Ship Building Co.....Chicago.
Cramp, Wm. & Sons.....Philadelphia.
Dearing Water Tube Boiler Co.....Detroit.
Delauney, Belleville & Co. St. Denis, France.
Detroit Ship Building Co.....Detroit.
Fletcher, W. A. & Co.....Hoboken, N. J.
Fore River Shipbuilding Co.....Quincy, Mass.
Georgian Bay Engineering Works.....
.....Midland, Ont.
Great Lakes Engineering Works.....Detroit.

BOILER MANUFACTURERS—Continued.

Kingsford Foundry & Machine Works....
.....Oswego, N. Y.
Marine Iron Works.....Chicago.
Maryland Steel Co.....Sparrows Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher Water Tube Boiler Co.....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
New York Shipbuilding Co.....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co....
.....Duluth, Minn.
Roberts Safety Water Tube Boiler Co....
.....New York.
Stirling, The Co.....Chicago.
Superior Ship Building Co.....Superior, Wis.
Taylor Water Tube Boiler Co.....Detroit.
Willard, Chas. P. & Co. Winthrop Harbor, Ill.

BOILER RIVETS.

Bourne-Fuller Co.....Cleveland.

BOILER STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

BOILER TUBES, MARINE.

Reading Iron Co.....Reading, Pa.

BRASS AND BRONZE CASTINGS.

Cramp, Wm. & Sons.....Philadelphia.
Fore River Ship & Engine Co.....Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Lunkenheimer Co.....Cincinnati.
Macbeth Iron Co.....Cleveland.

BRIDGES, BUILDERS OF.

Cowing, John P.....Cleveland.
Scherzer Rolling Lift Bridge Co.....Chicago.

BUCKETS, ORE AND COAL.

Brown Hoisting & Conveying Machine Co.
.....Cleveland.
McMyler Mfg. Co.....Cleveland.

BULKHEAD DOORS, WATERTIGHT.

"Long Arm" System Co.Cleveland

CABIN AND CABINET FINISHING WOODS.

Martin-Barriss Co.....Cleveland.

CANVAS SPECIALTIES.

Baker & Co., H. H.Buffalo.
Upson-Walton Co.....Cleveland.

CAPSTANS.

American Ship Windlass Co.....Providence, R. I.
Hyde Windlass Co.....Bath, Me.
Marine Mfg. & Supply Co.....New York.

CARPETS, RUGS AND FURNITURE.

Williams & Rodgers Co.....Cleveland.

CEMENT, IRON FOR REPAIRING LEAKS.

Smooth-On Mfg. Co.....Jersey City, N. J.

CHAINS.

Woodhouse Chain Works.....Trenton, N. J.

CHAIN CONVEYORS, HOISTS.

Brown Hoisting Machinery Co. (Inc.)....
.....Cleveland.
General Electric Co.....Schenectady, N. Y.

CHAIN HOISTS.

Boston & Lockport Block Co.....Boston, Mass.

CHARTS.

Penton Publishing Co.....Cleveland.
Potter, J. D.....London.

CLOCKS (Marine and Ship's Bell) AND CHRONOMETERS.

Ashton Valve Co.....Boston.
Ritchie, E. S. & Sons.....Brookline, Mass.

COAL PRODUCERS AND SHIPPERS.

Hanna, M. A. & Co.....Cleveland.
Ironville Dock & Coal Co.....Toledo, O.
Pickands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.

COAL AND ORE HANDLING MACHINERY.

Brown Hoisting Machinery Co. (Inc.) ..
.....Cleveland.
McMyler Mfg. Co.....Cleveland.

COMPASSES.

Ritchie, E. S. & Sons.....Brookline, Mass.

CONDENSORS.

Great Lakes Engineering Works.....Detroit.
Thropp & Sons Co., John E.....Trenton, N. J.

CONTRACTORS SUPPLIES.

Contractors Supply & Equipment Co., Chicago.

CONTRACTORS FOR PUBLIC WORKS.

Bremann & Bros., G. H.Toledo.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.
.....Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros.Sault Ste. Marie, Mich.
Lake Superior Contracting & Dredging Co.
.....Duluth, Minn.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H.Milwaukee.
Sullivan, M.Detroit.

CORDAGE.

Baker & Co., H. H.....Buffalo.
Upson-Walton Co.....Cleveland.

CORK JACKETS AND RINGS.

Armstrong Cork Co.....Pittsburg, Pa.
Kahnweiler's Sons, D.....New York.

CRANES, TRAVELING.

Brown Hoisting Machinery Co.....Cleveland.
McMyler Mfg. Co.....Cleveland.

DIVING APPARATUS.

Morse, A. J. & Son.....Boston.
Schrader's Son, A.....New York.

DREDGING CONTRACTORS.

Bremann & Bros., G. H.Toledo.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.
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Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H.Milwaukee.
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DRYING APPARATUS.

Sturtevant, B. F., Co.....Hyde Park, Mass.

DRY DOCKS.

American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Buffalo Dry Dock Co.....Buffalo.
Chicago Ship Building Co.....Chicago.
Craig Ship Building Co.....Toledo, O.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Lockwood Mfg. Co.....East Boston, Mass.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co.....
.....Newport News, Va.
Shipowners Dry Dock Co.....Chicago.
Superior Ship Building Co.....Superior, Wis.

Buyers' Directory of the Marine Trade.—Continued.

ELECTRIC HOISTS AND CRANES.

General Electric Co.....Schenectady, N. Y.

ELECTRIC LIGHT AND POWER PLANTS.General Electric Co.....Schenectady, N. Y.
Mietz, Aug.New York.
Sturtevant, B. F. Co.....Hyde Park, Mass.
Thropp & Sons, John E.....Trenton, N. J.**ENGINE BUILDERS, MARINE.**American Ship Building Co.....Cleveland.
Atlantic WorksEast Boston, Mass.
Bertram Engine Works Co., Ltd.
.....Toronto, Can.
Chicago Ship Building Co.....Chicago.
Chase Machine Co.....Cleveland.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Dake Engine Co.....Grand Haven, Mich.
Detroit Ship Building Co.....Detroit.
Fletcher, W. & A. Co.....Hoboken, N. J.
Fore River Shipbuilding Co.....Quincy, Mass.
Great Lakes Engineering Works Detroit, Mich.
Hall Bros.Philadelphia.
Lockwood Mfg. Co.....East Boston, Mass.
Marine Iron WorksChicago.
Maryland Steel Co.....Sparrows Point Md.
Mietz, Aug.New York.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher, Chas. D.....New York.
Moulton Steering Engine Co.....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
Nsw York Shipbuilding Co.....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co.....
.....Duluth, Minn.
Roach's Ship YardChester, Pa.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co.....Superior, Wis.
Thropp, J. E. & Sons Co.....Trenton, N. J.
Trout, H. G.....Buffalo.
Willard, Chas. P. & Co..Winthrop Harbor, Ill.**ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.**Cory, Chas. & Son.....New York.
Marine Mfg. Supply Co.....New York.**ENGINE TESTING.**

Kreer & Parsons.....Chicago.

ENGINEERING SPECIALTIES AND SUPPLIES.Crane Co.....Chicago.
Kieley & MuellerNew York.
Lunkenheimer Co.....Cincinnati.
New York Belting & Packing Co..New York.
Northwestern Steam Boiler & Mfg. Co.....
.....Duluth, Minn.**ENGINEERS, MARINE, MECHANICAL, CONSULTING.**Hynd, AlexanderCleveland.
Hunt, Robt. W. & Co.....Chicago.
Kidd, JosephDuluth, Minn.
Kreer & Parsons.....Chicago.
Lovejoy, H. O.....Buffalo.
Matteson & DrakePhiladelphia.
Mosher, Chas. D.....New York.
Nacey, JamesCleveland.
Rice, HenryBuffalo.
Roelker, H. B.....New York.
Wood, W. J.Chicago.**FANS FOR VENTILATION, EXHAUST, ETC.**

Sturtevant, B. F. Co.....Hyde Park, Mass.

FEED WATER PURIFIERS AND HEATERS.Reilly Repair and Supply Co., Jas.....New York.
Rose Valve Co.....Troy, N. Y.**FIXTURES FOR LAMPS, OIL OR ELECTRIC.**

General Electric Co.....Schenectady, N. Y.

FORGES.

Sturtevant, B. F. Co.....Boston.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.Cleveland City Forge & Iron Co.....Cleveland.
Fore River Shipbuilding Co.....Quincy, Mass.
Macbeth Iron Co.....Cleveland.**FLUE WELDING.**

Fix's, S. SonsCleveland.

FUEL ECONOMIZERS.

Sturtevant Co., B. F.....Hyde Park, Mass.

FUELING COMPANIES AND COAL DEALERS.Hanna, M. A. & Co.....Cleveland.
Ironville Dock & Coal Co.....Toledo, O.
Parker Bros. Co., Ltd.....Detroit.
Picklands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.
Smith, Stanley B., & Co.....Detroit.
Smith Coal & Dock Co., Stanley B.Toledo, O.**FURNACES FOR BOILERS.**

Continental Iron Works.....New York.

GASKETS, RUBBER.

New York Belting & Packing Co..New York.

GAS BUOYS.

Safety Car Heating & Lighting Co..New York.

GAS AND GASOLINE ENGINES.Chase Machine Co.....Cleveland.
Georgian Bay Engineering Works.....
.....Midland, Ont.**GAUGES, STEAM AND VACUUM.**American Steam Gauge & Valve Mfg. Co.
.....Boston.
Ashton Valve Co.....Boston.
Lunkenheimer Co.....Cincinnati.**GAUGES, WATER.**Bonner & Co., Wm. T.....Boston.
Lunkenheimer Co.....Cincinnati, O.**GRAPHITE.**

Dixon Crucible Co., Joseph..Jersey City, N. J.

HAMMERS, STEAM.

Chase Machine Co.....Cleveland.

HEATING APPARATUS.

Sturtevant, B. F. Co.....Hyde Park, Mass.

HOISTS FOR CARGO, ETC.American Ship Building Co.....Cleveland.
Brown Hoisting Machinery Co. (Inc.)....
.....Cleveland.
Chase Machine Co.....Cleveland.
General Electric Co.....New York.
Georgian Bay Engineering Works.....
.....Midland, Ont.
Hyde Windlass Co.....Bath, Me.
McMyler Mfg. Co.....Cleveland.
Marine Iron Co.....Bay City.
Mietz, Aug.New York.**HOLLOW STAYBOLT IRON.**

Falls Hollow Staybolt Co..Cuyahoga Falls, O.

HOSE, RUBBER.

New York Belting & Packing Co..New York.

HYDRAULIC DREDGES.

Great Lakes Engineering Works.....Detroit.

HYDRAULIC TOOLS.

Watson-Stillman Co., The.....New York.

ICE MACHINERY.Great Lakes Engineering Works.....Detroit.
Roelker, H. B.....New York.**INDICATORS FOR STEAM ENGINES.**American Steam Gauge Co.....Boston.
Ashton Valve Co.....Boston.**INJECTORS.**American Injector Co.....Detroit.
Crane Co.....Chicago.
Jenkins Bros.New York.
Lunkenheimer Co.....Cincinnati.
Penberthy Injector Co.....Detroit, Mich.**INSURANCE, MARINE.**Elphicke, C. W. & Co.....Chicago.
Fleming & Co., E. J.....Chicago.**INSURANCE, MARINE—Continued.**Gilchrist & Co., C. P.....Cleveland.
Hawgood & Co., W. A.....Cleveland.
Helm & Co., D. T.....Duluth.
Hutchinson & Co.....Cleveland.
McCarthy, T. R.....Montreal.
McCurdy, Geo. L.....Chicago.
Mitchell & Co.....Cleveland.
Parker Bros. Co., Ltd.....Detroit.
Peck, Chas. E. & W. F..New York & Chicago.
Prindville & Co.....Chicago.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago.**IRON CASTINGS.**

Reading Iron Co.....Reading, Pa.

IRON ORE AND PIG IRON.Bourne-Fuller Co.....Cleveland, O.
Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.
Reading Iron Co.....Reading, Pa.**LAUNCHES—STEAM, NAPHTHA, ELECTRIC.**Georgian Bay Engineering Works.....
.....Midland, Ont.
Marine Iron Works.....Chicago.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P.....Winthrop Harbor, Ill.**LIFE PRESERVERS, LIFE BOATS, BUOYS.**Armstrong, Cork Co.....Pittsburg.
Drein, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, D.New York**LIGHTS, SIDE AND SIGNAL.**

Russell & WatsonBuffalo.

LOGS.Nicholson Ship Log Co.....Cleveland.
Walker & Sons, ThomasBirmingham, Eng.
Also Ship Chandlers.**LUBRICATING GRAPHITE.**

Dixon Crucible Co., Joseph..Jersey City, N. J.

LUBRICATORS.Crane Co.....Chicago.
Lunkenheimer Co.....Cincinnati.**LUMBER.**

Martin-Barriss Co.....Cleveland.

MACHINISTS.Chase Machine Co.....Cleveland.
Hickler Bros.Sault Ste. Marie, Mich.
Lockwood Mfg. Co.....East Boston, Mass.**MACHINE TOOLS (WOOD WORKING).**

Atlantic Works, Inc.....Philadelphia.

MARINE RAILWAYS.

Hickler Bros.Sault Ste. Marie, Mich.

MARINE RAILWAYS, BUILDERS OF.

Crandall & Son, H. I....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Sturtevant, B. F. Co.....Hyde Park, Mass.**METALLIC PACKING.**

Katzenstein, L. & Co.....New York.

METAL POLISH.

Bertram's Oil Polish Co.....Boston

MOTORS, GENERATORS—ELECTRIC.Fisher Electrical Works.....Detroit.
General Electric Co.....Schenectady, N. Y.
Sturtevant, B. F. Co.....Hyde Park, Mass.

Buyers' Directory of the Marine Trade.—Continued.

NAUTICAL INSTRUMENTS.

Ritchie, E. S., & Sons.....Brookline, Mass.

NAVAL ARCHITECTS.

Hynd, AlexanderCleveland.
 Kidd, Joseph.....Duluth, Minn.
 Kreer & Parsons.....Chicago.
 Lovejoy, H. O.....Buffalo.
 Matteson & Drake.....Philadelphia.
 Mosher, Chas. D.....New York.
 Nacey, James.....Cleveland.
 Rice, Henry.....Buffalo.
 Wood, W. J.....Chicago.

OAKUM.

Stratford, Oakum Co.....Jersey City, N. J.

OIL ENGINES.

Miets, Aug.New York.

OILS AND LUBRICANTS.

Dixon Crucible Co., Joseph.....Jersey City, N. J.
 Standard Oil Co.....Cleveland.

PACKING.

Crane Co.Chicago.
 Jenkins Bros.....New York.
 Katzenstein, L. & Co.....New York.
 New York Belting & Packing Co.....New York.

PACKING TOOL.

Matteson & DrakePhiladelphia.

PAINTS.

Baker, Howard H. & Co.....Buffalo.
 Carbolineum Wood Preserving Co.....Milwaukee.
 New Jersey Zinc Co.....New York.
 Upson-Walton Co.Cleveland.

PATTERN SHOP MACHINERY.

Atlantic Works, Inc.....Philadelphia.

PILE DRIVING AND SUBMARINE WORK.

Buffalo Dredging Co.....Buffalo.
 Chicago & Gt. Lakes Dredge & Dock Co.....Chicago.
 Dunbar & Sullivan Dredging Co.....Buffalo.
 Fitz-Simons & Connell Co.....Chicago.
 Hickler Bros.....Sault Ste. Marie, Mich.
 Lake Superior Contracting & Dredging Co.....Duluth, Minn.
 Parker Bros. Co., Ltd.....Detroit.
 Smith Co., L. P. & J. A.....Cleveland.
 Starke Dredge & Dock Co., C. H.....Milwaukee.
 Sullivan, M.Detroit.

PIPE, WROUGHT IRON.

Bourne-Fuller Co.....Cleveland, O.
 Crane Co.....Chicago.
 Macbeth Iron Co.....Cleveland.
 Reading Iron Co.....Reading, Pa.

PLANING MILL MACHINERY.

Atlantic Works, Inc.....Philadelphia.

PLATES—SHIP, STRUCTURAL, ETC.

Bourne-Fuller Co.....Cleveland, O.
 Otis Steel Co.....Cleveland.
 Reading Iron Co.....Reading, Pa.

PRESSURE REGULATORS.

Kieley & MuellerNew York.
 Ross Valve Co.....Troy, N. Y.

PROPELLER WHEELS.

American Ship Building Co.....Cleveland.
 Atlantic WorksEast Boston, Mass.
 Cramp, Wm. & Sons.....Philadelphia.
 Detroit Ship Building Co.....Detroit.
 Fore River Shipbuilding Co.....Quincy, Mass.
 Great Lakes Engineering Works.....Detroit.
 Hyde Windlass Co.....Bath, Me.
 Lockwood Mfg. Co.....East Boston, Mass.
 Marine Iron Works.....Chicago.
 Milwaukee Dry Dock Co.....Milwaukee.
 Newport News Ship Building Co.....Newport News, Va.
 Roelker, H. B.....New York.
 Sheriffs Mfg. Co.....Milwaukee.
 Superior Ship Building Co.....Superior, Wis.
 Thropp & Sons Co., J. E.....Trenton, N. J.
 Trout, H. G.....Buffalo.

PROJECTORS, ELECTRIC.

General Electric Co.....Schenectady, N. Y.

PUMPS FOR VARIOUS PURPOSES.

Blake, Geo. F., Mfg. Co.....New York.
 Great Lakes Engineering Works.....Detroit.
 Marine Iron Works.....Chicago.
 Kingsford Foundry & Machine Works.....Oswego, N. Y.

REFRIGERATING APPARATUS.

Great Lakes Engineering Works.....Detroit.
 Roelker, H. B.....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.

Great Lakes RegisterCleveland.
 Record of American & Foreign Shipping.....New York.

REPAIRS—ENGINE AND BOILER.

(See also Boiler Manufacturers and Engine Builders.)

Georgian Bay Engineering Works.....Midland, Ont.

RIVETS, STEEL FOR SHIPS AND BOILERS.

Bourne-Fuller Co.....Cleveland, O.

SAFETY VALVES.

American Steam Gauge & Valve Mfg. Co.....Boston.
 Ashton Valve Co.....Boston.
 Crane Co.....Chicago.
 Lunkenheimer Co.....Cincinnati.

SAIL MAKERS.

Baker, Howard H. & Co.....Buffalo.
 Upson-Walton Co.....Cleveland.

SALVAGE COMPANIES.

See Wrecking Companies.

SEARCH LIGHTS.

General Electric Co.....Schenectady, N. Y.

SEARERS.

See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.

Bourne-Fuller Co.....Cleveland, O.
 Otis Steel Co.....Cleveland.
 Reading Iron Co.....Reading, Pa.

SHIP BUILDERS.

American Ship Building Co.....Cleveland.
 Atlantic WorksEast Boston, Mass.
 Bertram Engine Works Co., Ltd.....Toronto, Can.
 Buffalo Dry Dock Co.....Buffalo.
 Cramp, Wm. & Sons.....Philadelphia.
 Craig Ship Building Co.....Toledo, O.
 Chicago Ship Building Co.....Chicago.
 Detroit Ship Building Co.....Detroit.
 Fore River Shipbuilding Co.....Quincy, Mass.
 Great Lakes Engineering Works.....Detroit.
 Lockwood Mfg. Co.....East Boston, Mass.
 Maryland Steel Co.....Sparrows Point, Md.
 Milwaukee Dry Dock Co.....Milwaukee.
 Newport News Ship Building Co.....Newport News, Va.
 New York Shipbuilding Co.....Camden, N. J.
 Roach's Ship Yard.....Chester, Pa.
 Shipowner's Dry Dock Co.....Chicago.
 Smith & Son, Abram.....Algona, Mich.
 Willard, Chas. P. & Co.....Winthrop Harbor, Ill.

SHIP CHANDLERS.

American Canvas & Tarpaulin Corp.....Buffalo.
 Baker, Howard H. & Co.....Buffalo.
 Marine Mfg. & Supply Co.....New York.
 Upson-Walton Co.....Cleveland.

SHIP DESIGNERS.

Kidd, Joseph.....Duluth.
 Kreer & Parsons.....Chicago.
 Matteson & Drake.....Buffalo.
 Rice & Lovejoy.....Buffalo.
 Steel, Nacey & Hynd.....Cleveland.
 Wood, W. J.....Chicago.

SHIP LANTERNS AND LAMPS.

Russell & WatsonBuffalo.

SHIP TIMBER.

Martin-Barriss Co.....Cleveland.

SMOOTH-ON COMPOUND, FOR REPAIRS.

Smooth-On Mfg. Co.....Jersey City, N. J.

STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.
 Reading Iron Co.....Reading, Pa.

STEAM VESSELS FOR SALE.

Gilchrist & Co., C. P.....Cleveland.
 Holmes, SamuelNew York.
 Lester, S. S.....Quebec, Can.
 McCarthy, T. R.....Montreal, Can.

STEAMSHIP LINES, PASS. AND FREIGHT.

American LineNew York.
 Anchor LineBuffalo.
 Boston Steamship Co.....Boston.
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 Lovejoy, H. O.....Buffalo.
 Matteson & DrakePhiladelphia.
 Parker Bros. Co., Ltd.....Detroit.
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 Wood, W. J.....Chicago.

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 Lunkenheimer Co.....Cincinnati, O.

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 Sturtevant Co., B. F.,Hyde Park, Mass.

TRUCKS.

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Shelby Steel Tube Co.....Pittsburg, Pa.

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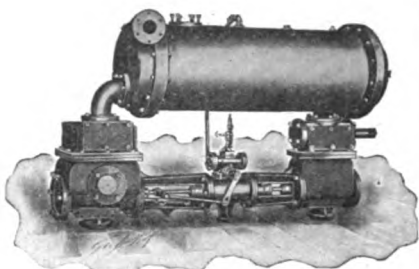
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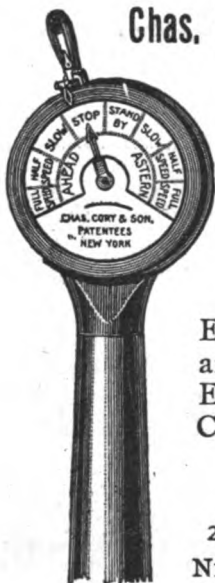
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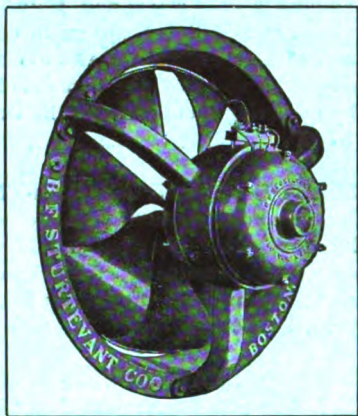
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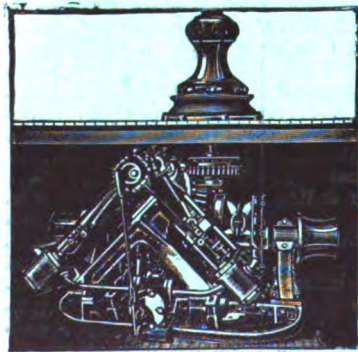
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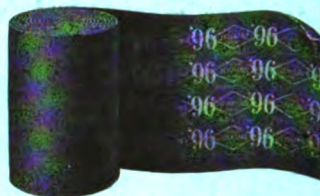
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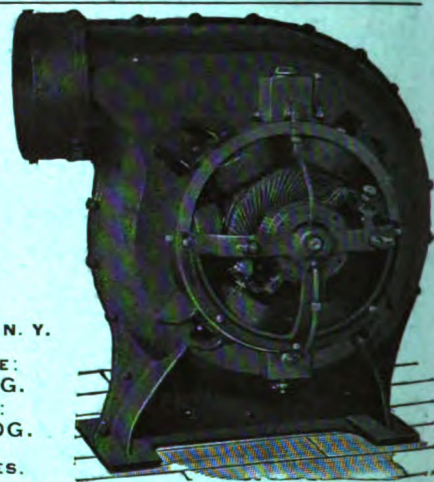
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